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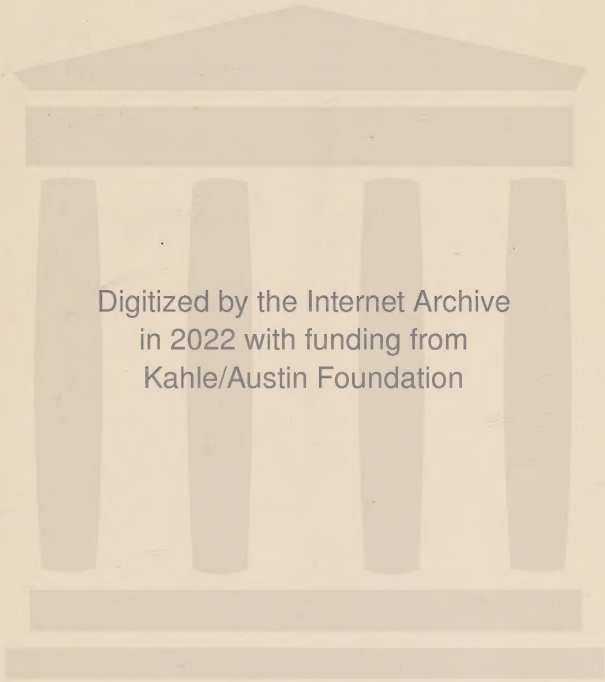
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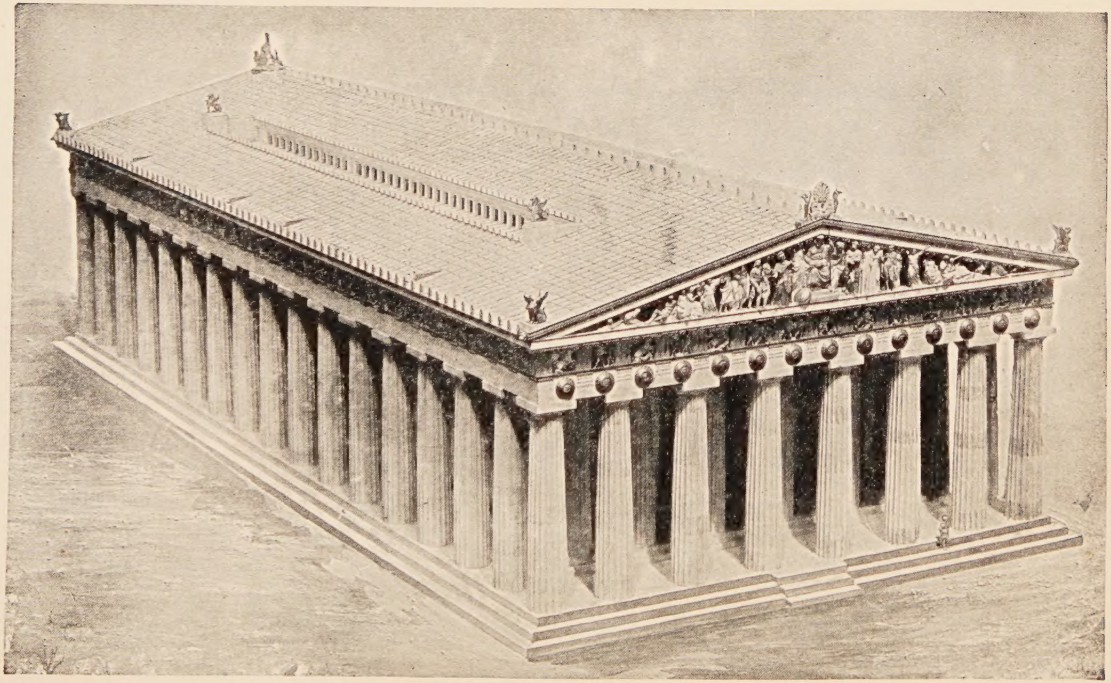

THE PARTHENON, ATHENS, AS RESTORED BY CH. CHIPIEZ.

(From model in Metropolitan Museum, New York.)

A TEXT-BOOK OF THE HISTORY OF ARCHITECTURE

BY

A. D. F. HAMLIN, A.M., L.H.D., F.A.I.A.

LATE PROFESSOR OF THE HISTORY OF ARCHITECTURE
IN COLUMBIA UNIVERSITY

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PREFACE TO THE REVISED EDITION

(Eighteenth Printing)

THE six years that have elapsed since the late Professor Hamlin's last revision of this book have been so full of architectural achievement, and in them the trends of architectural style development have been so definite and revealing, that it has seemed wise to add a chapter, entirely new, dealing with the architecture of the present time. Moreover, new interest in the architecture of the Far East, and a wider knowledge with regard to it, has led to the complete rewriting of the paragraphs dealing with this subject. Occasional new books have been added to the Bibliographies.

Otherwise no changes have been made. Now that Professor Hamlin has gone, any change in his historical analysis or his critical judgments is manifestly unjust; they stand as their own vindication and as his monument. Even where my own personal judgment might differ from his — as, notably, in his destructive criticism of the Italian Baroque style and its artists (a view from which most modern critics must energetically dissent) — I have nevertheless left the original text.

The additions and revisions of the present edition have therefore been made merely to bring the book up to date as its original author would wish, and had intended; and thus to preserve its continuing usefulness as a general survey of the history of architecture up to the present day.

TALBOT FAULKNER HAMLIN

June, 1928

PREFACE TO FIRST EDITION

THE aim of this work has been to sketch the various periods and styles of architecture with the broadest possible strokes, and to mention, with such brief characterization as seemed permissible or necessary, the most important works of each period or style. Extreme condensation in presenting the leading facts of architectural history has been necessary, and much that would rightly claim place in a larger work has been omitted here. The danger was felt to be rather in the direction of too much detail than of too little. While the book is intended primarily to meet the special requirements of the college student, those of the general reader have not been lost sight of. The majority of the technical terms used are defined or explained in the context, and the small remainder in a glossary at the end of the work. Extended criticism and minute description were out of the question, and discussion of controverted points has been in consequence as far as possible avoided.

The illustrations have been carefully prepared with a view to elucidating the text, rather than for pictorial effect. With the exception of some fifteen cuts reproduced from Lübke's *Geschichte der Architektur* (by kind permission of Messrs. Seemann, of Leipzig), the illustrations are almost all entirely new. A large number are from original drawings made by myself, or under my direction, and the remainder are, with a few exceptions, half-tone reproductions prepared specially for this work from photographs in my possession. Acknowledgments are due to Messrs. H. W. Buemming, H. D. Bultman, and A. E. Weidinger for valued assistance in preparing original drawings; and to Professor W. R. Ware, to Professor W. H. Thomson, M.D., and

to the Editor of the Series for much helpful criticism and suggestion.

It is hoped that the lists of monuments appended to the history of each period down to the present century may prove useful for reference, both to the student and the general reader as a supplement to the body of the text.

A. D. F. Hamlin

Columbia College, New York
January 20, 1896

PREFACE TO REVISED EDITION

(Fifteenth Printing)

Since the last general revision of this book, in 1909, the accumulation of new facts and new information in the fields of architectural history and archæology has seemed to demand a fresh revision. In order that such revision might be as free as possible, the type has been completely reset, but it has seemed desirable to keep the cost of the volume within limits and to retain as far as possible the size and appearance of the book made familiar in previous editions. The author has therefore confined himself mainly to the correction of errors, the recording of the more recent conclusions of archæologists and historians on matters regarding which new light has led to new views, the rearrangement of a number of topics in the chapters on the mediæval styles, the bringing up to date of the bibliographies, and the abridgment of some of the lists of monuments at the ends of chapters to avoid repetition. A few paragraphs have been wholly rewritten and a moderate amount of new matter added, where new achievements or discoveries, the havoc of the Great War, or the filling up of obvious gaps seemed to require it.

For the reasons stated above it was decided to make as little change as possible in the illustrations; some cuts have been re-drawn and new half-tones made to replace plates worn out by many printings.

In this revision the author acknowledges the valuable assistance of Mr. W. B. Dinsmoor, Librarian of the Avery Architectural Library and a distinguished authority on classical archæology, in the chapters on Greek architecture; and of Professor A. C. Phelps of the College of Architecture of Cornell University, in supplying suggestions for the correction of errors, both of typography and statement in former editions, and for the improvement of the text in other ways. To these gentlemen, as well as to others who have aided in lesser details, and to the publishers for their sympathetic coöperation, I desire to express my sincere thanks.

A. D. F. Hamlin

School of Architecture
Columbia University
September 1, 1921

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INTRODUCTION

A HISTORY of architecture is a record of man's efforts to build beautifully. The erection of structures devoid of beauty is mere building, a trade and not an art. Edifices in which strength and stability alone are sought, and in designing which only utilitarian considerations have been followed, are properly works of engineering. Only when the idea of beauty is added to that of use does a structure take its place among works of architecture. We may, then, define architecture as the art which seeks to harmonize in a building the requirements of utility and of beauty. It is the most useful of the fine arts and the noblest of the useful arts. It touches the life of man at every point. It is concerned not only in sheltering his person and ministering to his comfort, but also in providing him with places for worship, amusement, and business; with tombs, memorials, embellishments for his cities, and other structures for the varied needs of a complex civilization. It engages the services of a larger portion of the community and involves greater outlays of money than any other occupation except agriculture. Everyone at some point comes in contact with the work of the architect, and from this universal contact architecture derives its significance as an index of the civilization of an age, a race, or a people.

It is the function of the historian of architecture to trace the origin, growth, and decline of the architectural styles which have prevailed in different lands and ages, and to show how they have reflected the great movements of civilization. The migrations, the conquests, the commercial, social and religious changes among different peoples have all manifested themselves in the changes of their architecture, and it is the historian's function to

show this. It is also his function to explain the principles of the styles, their characteristic forms and decoration, and to describe the great masterpieces of each style and period.

STYLE is a quality; the "historic styles" are phases of development. *Style* is expressive character. An *historic style* is the particular phase, the characteristic manner of design, which prevails at a given time and place. It is not the result of mere accident or caprice, but of intellectual, moral, social, religious, and even political conditions. Gothic architecture could never have been invented by the Greeks, nor could the Egyptian styles have grown up in Italy. Each style is based upon some fundamental principle springing from its surrounding civilization, which undergoes successive developments until either it reaches perfection or its possibilities are exhausted, after which a period of decline usually sets in. This is followed either by a reaction and the introduction of some radically new principle leading to the evolution of a new style, or by the final decay and extinction of the civilization and its replacement by some younger and more virile element. Thus the history of architecture appears as a connected chain of causes and effects succeeding each other without break, each style growing out of that which preceded it, or springing out of the fecundating contact of a higher with a lower civilization. To study architectural styles is therefore to study a branch of the history of civilization.

Technically, architectural styles are identified by the means they employ to cover enclosed spaces, by the characteristic forms of the supports and other members (piers, columns, arches, mouldings, traceries, etc.), and by their decoration. The **plan** should receive special attention, since it shows the arrangement of the points of support, and hence the nature of the structural design. A comparison, for example, of the plans of the Hypostyle Hall at Karnak (Fig. 11, *h*) and of the Basilica of Constantine (Fig. 58) shows at once a radical difference in constructive principle between the two edifices, and hence a difference of style.

STRUCTURAL PRINCIPLES. All architecture is based on

one or more of five fundamental structural systems, distinguished by the means employed to span the open space between supports; that of the *lintel*, of the *arch* or *vault*, of the *corbel*, of the *truss*, and of *cohesive construction*. The principle of the **lintel** is that of resistance to transverse strains, and appears in all construction in which a single cross-piece or beam rests on two or more vertical supports. The **arch** or **vault** makes use of several pieces to span an opening between two supports. These pieces are in compression and exert lateral pressures or *thrusts* which are transmitted to the supports or abutments. The thrust must be resisted either by the massiveness of the abutments or by the opposition to it of counter-thrusts from other arches or vaults. Roman builders used the first, Gothic builders the second of these means of resistance. In **corbeled** construction successive courses or units of the masonry project each over the one below from either side of the space to be spanned, until the topmost ones meet, or so nearly meet that a single block can cover the space thus reduced. The **truss** is a framework so composed of several pieces of wood or metal that each shall best resist the particular strain, whether of tension or compression, to which it is subjected, the whole forming a compound beam. It is especially applicable to very wide spans, and is the most characteristic feature of modern construction. Figs. A and B illustrate these four systems.

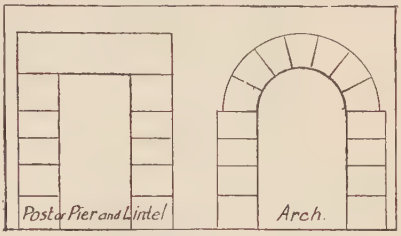

FIG. A

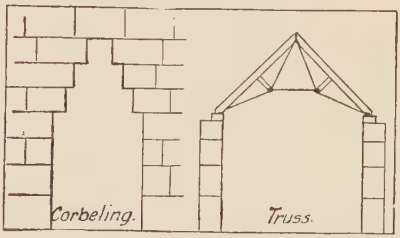

FIG. B

The fifth system, that of the **cohesion** of materials shaped while plastic, and hardening or "setting" into a homogeneous structural unit, although known to the Romans and employed by them in a limited way, has within recent years undergone an extraordinarily rapid development. It employs concrete, made of cement and small stones or other like material, moulded while plastic into the necessary structural forms and supplied with bars, rods or wires of metal buried in the concrete to take up any and all tensile strains in the beams or slabs subject to transverse pressure, and which the concrete alone is ill-fitted to resist. The applications of this system are known by various names grouped under the generic term "reënforced concrete." While its most rapid development has been in works of pure engineering, its applications to architecture are being daily multiplied and it is sure to exert a marked influence on the design of the coming years. How the adoption of one or another of these systems affected the forms and even the decoration of the various styles will be shown in the succeeding chapters.

HISTORIC DEVELOPMENT. Geographically and chronologically, architecture appears to have originated in the Nile valley. A second centre of development is found in the valley of the Tigris and Euphrates, not uninfluenced by the older Egyptian art. A third centre of artistic culture, later in date than the two just mentioned, has since 1900 been discovered to have existed in Crete. Through various channels the Greeks inherited from all three civilizations, the several influences being discernible even through the strongly original aspect of Greek architecture. The Romans in turn, adopting the external details of Greek architecture, transformed its substance by substituting the Etruscan arch for the Greek construction of columns and lintels. They developed a complete and original system of construction and decoration and spread it over the civilized world, which has never wholly outgrown or abandoned it.

With the fall of Rome and the rise of Constantinople these

forms underwent in the East another transformation, called the Byzantine, in the development of Christian domical church architecture. In the North and West, meanwhile, under the growing institutions of the papacy and of the monastic orders and the emergence of a feudal civilization out of the chaos of the Dark Ages, the constant preoccupation of architecture was to evolve from the basilica type of church a vaulted structure, and to adorn it throughout with an appropriate dress of structural and symbolic ornament. Gothic architecture was the outcome of this preoccupation and it prevailed throughout northern and western Europe until nearly or quite the close of the fifteenth century.

During this fifteenth century the Renaissance style matured in Italy, where it speedily triumphed over Gothic fashions and produced a marvellous series of civic monuments, palaces, and churches, adorned with forms based on the still surviving traditions and remains of classic Roman art. This influence spread through Europe in the sixteenth century, and ran a course of two centuries, followed by a gradual decline in taste. To this succeeded the eclecticism and confusion of the nineteenth century, to which the rapid growth of new requirements and development of new resources largely contributed.

In Eastern lands three great schools of architecture have grown up contemporaneously with the above phases of Western art; one under the influence of Mohammedan civilization, another in the Brahman and Buddhist architecture of India and the third in China and Japan. The first of these is the richest and most important. Primarily inspired in large measure from Byzantine art, always stronger on the decorative than on the constructive side, it has given to the world the mosques and palaces of Northern Africa, Moorish Spain, Persia, Turkey, and India. The other two schools seem to be wholly unrelated to the first, and have no affinity with the architecture of Western lands.

Of Mexican, Central American, and South American architec-

ture previous to the Spanish conquests so little is really known, and that little is so remote in history and spirit from the styles above enumerated, that it belongs rather to archæology than to architectural history, and will not be considered in this work.

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HISTORY OF ARCHITECTURE

CHAPTER I

PRIMITIVE AND PREHISTORIC ARCHITECTURE

BOOKS RECOMMENDED: Breasted, *The Origins of Civilization*, in "The Scientific Monthly," 1919. Fergusson, *Rude Stone Monuments*. Lyell, *The Antiquity of Man*. Lubbock, *Prehistoric Times*. Müller, *L'Europe préhistorique*. Osborn, *Men of the Old Stone Age*. Rougemont, *L'age du bronze*. Tylor, *Primitive Culture*. Waring, *Stone Monuments, Tumuli and Ornament of Remote Ages*.

EARLY BEGINNINGS. It is impossible to trace the early stages of the process by which true architecture grew out of the first rude attempts of man at building. The oldest existing monuments of architecture—those of Chaldæa and Egypt—belong to an advanced civilization. The rude and elementary structures built by savage and barbarous peoples, like the Hottentots or the tribes of Central Africa, are not in themselves works of architecture, nor is any instance known of the evolution of a civilized art from such beginnings. The existing relics of primitive ages have thus far failed to reveal by what steps and processes the earliest primitive building was developed into genuine architecture. So far as these remains show, such development has always come through contact of the primitive culture with some existing civilization of which it appropriated the spirit, the processes, and the forms.

PRIMITIVE ARCHITECTURE is therefore a subject for the archæologist rather than the historian of art, and needs here

only the briefest mention. If we may judge of the condition of primitive races of antiquity by that of the savage and barbarous peoples of our own time, they required only the simplest kinds of buildings, though the purposes which they served were the same as those of later times in civilized communities. A hut or cave, for shelter, a shrine of some sort for worship, a stockade for defence, a cairn or mound over the grave of the chief or hero, were provided out of the simplest materials, and by the use of the simplest tools. There was ingenuity in work of this kind, but no fitting together into a complex organism of varied materials shaped with art and handled with science, and no progression toward higher ideals of fitness and beauty. Rudimentary art displayed itself mainly in objects of worship, or in talismanic decorations of canoes and weapons; but even this art was sterile and never grew of itself into civilized and progressive art.

Yet there must have been at some point in the remote past an exception to this rule. Somewhere and somehow the first civilized people, perhaps of Egypt, either in Egypt or in some earlier ancestral home, must have developed from crude beginnings the architectural knowledge and resource which meet us in the oldest monuments, though every vestige of that early age has apparently perished. But although nothing has come down to us of the actual work of the builders who wrought in the primitive ages of mankind, there exist throughout Europe and Asia numerous monuments of a primitive character executed before the advent of historic civilization to the regions where they are found. A general resemblance among them suggests a common heritage of traditions from the hoariest antiquity, and throws light on the probable character of the transition from barbaric to civilized architecture.

PREHISTORIC MONUMENTS. These monuments vary widely in age as well as in excellence; some of them belong to Roman or even Christian times; others to a much remoter period. They are divided into two principal classes, the megalithic structures

and lake dwellings. These last comprise a considerable number of very primitive houses or huts built on wooden piles in the lakes of Switzerland and several other countries, forming in some cases villages of no mean size. Such villages, built over the water for protection from attack, are mentioned by the writers of antiquity and portrayed on Assyrian reliefs. The objects found in them reveal an incipient but almost stationary civilization, extending back some thousands of years, and lasting down to historic times.

The **megalithic** remains of Europe and Asia are far more important. They are very widely distributed, and consist in most cases of great blocks of stone arranged in rows, circles, or avenues. Upright stones without lintels are called *menhirs;* standing in pairs with lintels they are known as *dolmens;* the circles are called *cromlechs.* Some of the stones are of gigantic size, some roughly hewn into shape; others left as when quarried. Their age and purpose have been much discussed without reaching positive results. It is probable that, like the lake dwellings, they cover a long range of time, reaching from the dawn of recorded history some thousands of years back into the unknown past and were erected by races which disappeared before the migrations to which Europe owes her present populations. That most of them were in some way connected with the worship of these prehistoric peoples is generally admitted; but whether as temples, tombs, or memorials of historical or mythical events cannot, in all cases, be positively asserted. They are imposing by the size and number of their immense stones, but show no sign of advanced art, or of conscious striving after beauty of design. The small number of "carved stones," bearing singular ornamental patterns, symbolic or mystical rather than decorative in intention, tends to prove this statement rather than to controvert it. Some antiquaries contend that many of the European circles and avenues were intended as battle-monuments or trophies.

There are also **walls** of great antiquity in various parts of Europe intended for fortification; the most important of these in Greece and Italy will be referred to in later chapters. They belong to a more advanced art, some of them even deserving to be classed among works of archaic architecture.

The **tumuli,** or burial mounds, which form so large a part of the prehistoric remains of both continents, are interesting to the architect only as revealing the prototypes of the pyramids of Egypt, of the subterranean tombs of Mycenæ and other early Greek centres, and of certain Roman tombs. The piling of huge cairns or commemorative heaps of stone is known from the Scriptures and other ancient writings to have been a custom of the greatest antiquity. The pyramids of Egypt and the Mausoleum at Halicarnassus are the most imposing and elaborate outgrowths of this practice, of which the prehistoric tumuli are the simpler manifestations.

The **pueblos** and cliff settlements of the American Indians in New Mexico and Arizona, with their rude masonry built into caves and huge cliffs in the rock, display a rudimentary approach to a genuine primitive architecture in their elaborate planning and the use of plaster and even painted decorations. But there is still a wide gap that separates them from that genuine architecture which forms the subject of the following chapters.

MONUMENTS. The most celebrated in England are at Avebury, an avenue, large and small circles, barrows, and the great tumuli of Bartlow and Silbury "Hills"; at Stonehenge, on Salisbury Plain, great megalithic circles and many barrows; "Sarsen stones" at Ashdown; tumuli, dolmens, chambers, and circles in Derbyshire. In Ireland, many cairns and circles. In Scotland, circles and barrows in the Orkney Islands. In France, Carnac and Lokmariaker in Brittany are especially rich in dolmens, circles, and avenues. In Scandinavia, Germany, and Italy, in India and in Africa, are many similar remains.

CHAPTER II

EGYPTIAN ARCHITECTURE

BOOKS RECOMMENDED: Bell, *The Architecture of Ancient Egypt.* Blakeman, *Luxor and its Temples.* Breasted, *A History of Egypt from the Earliest Times.* Champollion, *Monuments de l'Egypte et de la Nubie.* Choisy, *L'art de bâtir chez les Egyptiens.* Lepsius, *Denkmäler aus Aegypten und Aethiopien.* Maspéro, *Egyptian Archæology.* Perrot and Chipiez, *History of Art in Ancient Egypt.* Prisse d'Avennes, *Histoire de l'art égyptien.* Petrie, *History of Egypt; The Pyramids and Temples of Gizeh; Ten Years' Digging in Egypt,* 1881–91. Wilkinson, *Manners and Customs of Ancient Egyptians.* (Also many other titles under Mariette, Maspéro, Naville, and Petrie.)

LAND AND PEOPLE. As long ago as 3500 B.C., the Egyptians were a people already highly civilized, and skilled in the arts of peace and war. The narrow valley of the Nile, fertilized by the periodic overflow of the river, was flanked by rocky heights, nearly vertical in many places, which afforded abundance of excellent building stone, while they both isolated the Egyptians and protected them from foreign aggression. At the Delta, however, the valley widened out, with the falling away of these heights, into broad lowlands, from which there was access to the outer world. Originally divided into two kingdoms, the whole country as far as Nubia was united under one monarchy at a period variously estimated as from 3000 to 4000 years B.C., under a dynasty known as the first of a series of twenty-six preserved to us in the dynastic lists of Manetho, a priest of the first century A.D. Menes is the traditional name of the first king of the first dynasty to rule over both Upper and Lower Egypt.

The art history of Egypt may be divided into five periods as follows:*

I. The Ancient Empire (cir. 3400-2160 B.C.), comprising the first ten dynasties, with Memphis as the capital.

II. The First Theban Monarchy or Middle Empire (2160–1788 B.C.), comprising the eleventh and twelfth dynasties reigning at Thebes.

The Hyksos invasion, with other disturbances, interrupted the current of Egyptian art history for a period of some two hundred years, covering five dynasties.

III. The Second Theban Monarchy (1588–1150 B.C.), comprising the eighteenth, nineteenth and part of the twentieth dynasty, was the great period of Egyptian history; the age of conquests and of vast edifices.

IV. The Decadence and Saitic Periods (1150–324 B.C.), comprising the remaining dynasties to and including the twenty-sixth, reigning at Tanis, Bubastis and Sais, and the Persian conquest; a period almost barren of important monuments.

(Periods III and IV constitute together the period of the New Empire, if we omit the Persian dominion.)

V. The Revival (from 324 B.C. to cir. 330 A.D.) comprises the Ptolemaic or Macedonian and Roman dominations.

THE ANCIENT EMPIRE: THE PYRAMIDS. The great works of this period are almost exclusively sepulchral, and include the most ancient buildings of which we have any remains. The overwhelming size and majesty of the Pyramids, and the audacity and skill shown in their construction, entitle them to the first place in any sketch of this period. They number over a hundred, scattered in six groups, from Abu-Roash in the north to Meidoum in the south, and are of various shapes and

* The dates are those given by Breasted; those assigned by Flinders Petrie are several centuries earlier for the earlier dynasties.

sizes. They are all royal tombs and belong to the first twelve dynasties; each contains a sepulchral chamber, and each at one time possessed a chapel or temple adjacent to it, but this has, in almost every case, perished.

Three pyramids surpass all the rest by their prodigious size; these are at Ghizeh and belong to the fourth dynasty. They are known by the names of their builders; the oldest and greatest being that of **Cheops,** or Khufu;* the second, that of **Chephren,**

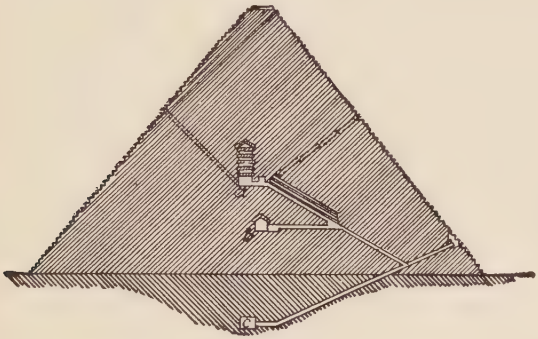

FIG. 1.—SECTION OF GREAT PYRAMID.
a, King's Chamber; b, Queen's Chamber; c, Chamber cut in Rock.

or Khafra; and the third, that of **Mycerinus,** or Menkhaura. Other smaller ones stand at the feet of these giants.

The base of the "Great Pyramid" measures 764 feet on a side; its height is 482 feet, and its volume must have originally been nearly three and one-half million cubic yards (Fig. 1). It is constructed of limestone upon a plateau of rock levelled to receive it, and was finished externally, like its two neighbors, with a coating of polished stone, supposed by some to have been disposed in bands of different colored granites, but of which it was long ago despoiled. It contained three principal chambers and

* The Egyptian names known to antiquity are given here first in the more familiar classic form, and then in the Egyptian form.

an elaborate system of inclined passages, all executed in finely cut granite and limestone. The sarcophagus was in the uppermost chamber, above which the superincumbent weight was relieved by open spaces and a species of rudimentary arch of ∧-shape (Fig. 2). The other two pyramids differ from that of Cheops in the details of their arrangement and in size, not in the principle of their construction. Chephren is 454 feet high, with a base 717 feet square. Mycerinus, which still retains its casing of pink granite, is but 218 feet in height, with a base 253 feet on a side.

FIG. 2.—SECTION OF KING'S CHAMBER.

Among the other pyramids there is considerable variety both of type and material. At Sakkarah is one 190 feet high, constructed in six unequal steps on a slightly oblong base measuring nearly 400 × 357 feet. It was attributed by Mariette to Ouenephes, of the first dynasty, though now more generally ascribed to Senefrou of the third. At Abu-Seir and Meidoum are other stepped pyramids; at Dashour is one having a broken slope, the lower part steeper than the upper. Several at Meroë with unusually steep slopes belong to the Ethiopian dynasties of the Decadence. A number of pyramids are built of brick.

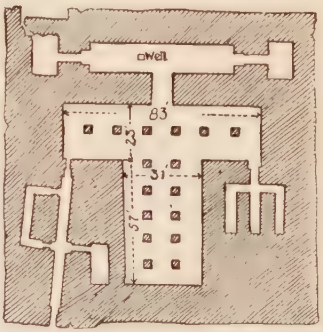

FIG. 3.—PLAN OF SPHINX TEMPLE.

TOMBS. The Ancient Empire has also left us a great number of tombs of the type known as *Mastabas*. These are oblong

rectangular structures of stone or brick with slightly inclined sides and flat ceilings. They uniformly face the east, and are internally divided into three parts: the chamber or chapel, the *serdab*, and the well. In the first of these, next the entrance, were placed the offerings made to the *Ka* or "double," for whom also scenes of festivity or worship were carved and painted on its walls to minister to his happiness in his incorporeal life. The serdabs, or secret inner chambers, of which there were several in each mastaba, contained statues of the defunct, by which the existence and identity of the Ka were preserved. Finally came the well, leading to the mummy chamber, deep underground, which contained the sarcophagus. The sarcophagi, both of this and later ages, are good examples of the minor architecture of Egypt; many of them are panelled in imitation of wooden construction and richly decorated with color, symbols, and hieroglyphs.

OTHER MONUMENTS. Two other monuments of the Ancient Empire also claim attention: the **Sphinx** and the adjacent so-called **"Sphinx temple"** at Ghizeh. The first of these, a huge sculpture carved from the rock, represents Harmachis in the form of a human-headed lion. It is ordinarily partly buried in the sand; is 70 feet long by 66 feet high, and forms one of the most striking monuments of Egyptian art. Close to it lie the nearly buried ruins of the temple once supposed to be that of the Sphinx, but now proved by Petrie to have been erected in connection with the second pyramid. The plan and present aspect of this venerable edifice are shown in Figs. 3 and 4. The hall was roofed with stone lintels carried on sixteen square monolithic piers of alabaster. The whole was

FIG. 4.—RUINS OF SPHINX TEMPLE.

buried in a rectangular mass of masonry and revetted internally with alabaster, but was wholly destitute internally as well as externally of decoration or even of mouldings.

The remains of a few of the temples connected with the pyramids have been uncovered, showing the use, under the early dynasties, of both circular and clustered columns of types fully developed in the later periods. These, and a temple at Meidoum are, with the "Sphinx" temple, the only survivals of their class from that early age.

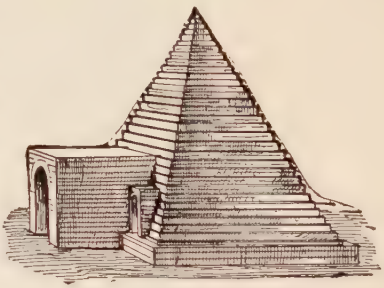

FIG. 5.—TOMB AT ABYDOS.

THE MIDDLE EMPIRE: TOMBS. The monuments of this period, as of the preceding, are almost wholly sepulchral. One type of tomb, structural and pyramidal and built of brick, is represented by many examples at Abydos, the most venerated of all the burial grounds of Egypt (Fig. 5). The second type is that of tombs cut in the vertical cliffs of the east bank of the Nile Valley. But such tunnels only become works of architecture when, in addition to the customary mural paintings, they receive a decorative treatment in the design of their structural forms. Such a treatment appears in several tombs at Beni-Hassan, in which columns

FIG. 6.—TOMB AT BENI-HASSAN.

are reserved in cutting away the rock, both in the chapel-chambers and in the vestibules or porches which precede them. These columns are polygonal in some cases, clustered in others. The former type, with eight, sixteen, or thirty-two sides (in these last the *arrises* or edges are emphasized by a slight concavity in each face, like embryonic fluting), have a square abacus, suggesting the Greek Doric order, and giving rise to the name *proto-Doric* (Fig. 6). Columns

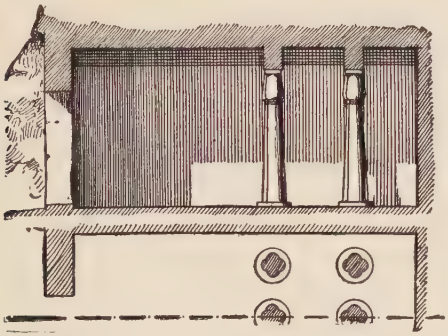

FIG. 7.—SECTION AND HALF-PLAN OF A TOMB AT BENI-HASSAN.

of this type are also found at Karnak, Kalabshé, Amada, and Abydos. A reminiscence of primitive wood construction is seen in the dentils over the plain architrave of the entrance, which in other respects recalls the triple entrances to certain mastabas of the Old Empire. These dentils are imitations of the ends of rafters, and to some archæologists suggest a wooden origin for the whole system of columnar design. But these rock-cut shafts and heavy architraves in no respect resemble wooden prototypes, but point rather to an imitation cut in the rock of a well-developed, pre-existing system of stone construction, though with details derived from still earlier

structures of wood. The vault was below the chapel and reached by a separate entrance. The serdab was replaced by a niche in which was the figure of the defunct carved from the native rock. Some of the tombs employed in the chapel-chamber columns of quatrefoil section with capitals like clustered buds (Fig. 7), and this type became in the next period one of the most characteristic forms of Egyptian architecture.

TEMPLES. Of the temples of this period only two have left any remains of importance. Both belong to the twelfth dynasty (cir. 2000 B.C.). Of one of these many badly shattered fragments have been found in the ruins of Bubastis; these show the clustered type of lotus-bud column mentioned above. The other, of which a few columns have been identified among the ruins of the Great Temple at Karnak, constituted the oldest part of that vast agglomeration of religious edifices, and employed columns of the so-called proto-Doric type. From this time on the palm-column of the Old Empire and the clustered column seem to have displaced the proto-Doric type. From these early temples was developed the whole architectural system of the New Empire; for the use of multiplied columns of various types and the building of temples of complex plan adorned with colossal statues, obelisks, and painted reliefs were perfectly understood and practised in this period. But the works it produced have perished, having been most probably demolished to make way for the more sumptuous edifices of later times.

THE NEW EMPIRE. This was the grand age of Egyptian architecture and history. An extraordinary series of mighty men ruled the empire during a long period following the expulsion of the Hyksos usurpers. The names of Thothmes, Amenophis, Hatasu,* Seti, and Rameses† made glorious the eighteenth and

* More correctly written Thutmosis, Amen-hotep, Hatshepsut.

† While it is now known that Rameses II carved his own cartouche on many works erected under his predecessors, enough great works—chiefly temples—are indisputably of his reign to entitle him to rank among the greatest builder-monarchs of history.

nineteenth dynasties. Foreign conquests in Ethiopia, Syria, and Assyria enlarged the territory and increased the splendor of the empire. The majority of the most impressive ruins of Egypt belong to this period, and it was in these buildings that the characteristic elements of Egyptian architecture were brought to perfection and carried out on the grandest scale.

TOMBS OF THE NEW EMPIRE. Some of these are structural, others excavated; both types displaying considerable variety in arrangement and detail. The rock-cut tombs of Babel-Molouk, among which are twenty-five royal sepulchres, are striking both by the simplicity of their openings and the depth and complexity of their shafts, tunnels, and chambers. From the pipe-like length of their tunnels they have since the time of Herodotus been known by the name *syrinx*. Every precaution was taken to lead astray and baffle the intending violator of their sanctity. They penetrated hundreds of feet into the rock; their chambers, often formed with columns and vault-like roofs, were resplendent with colored reliefs and ornament destined to solace and sustain the shadowy Ka until the soul itself, the Ba, should arrive before the tribunal of Osiris, the Sun of Night. Most impressively do these brilliant pictures,* intended to be forever shut away from human eyes, attest the sincerity of the Egyptian belief and the conscientiousness of the art which it inspired.

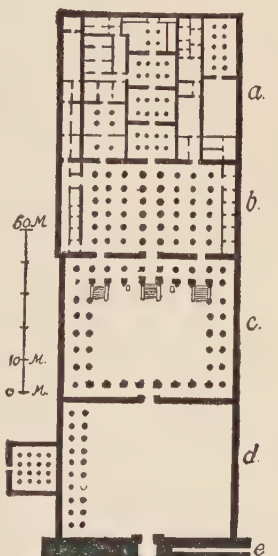

FIG. 8.—PLAN OF THE RAMESSEUM.

Sanctuary; b, Hypostyle Hall; c, Second court; d, Entrance court, e, Pylons.

Recent excavations at Thebes at the expense of the late

*See Van Dyke's *History of Painting*, Figure 1.

Lord Carnarvon have disclosed a tomb, previously hidden, which on being opened was found to contain the complete furnishings of a royal burial, identified as those of Tut-ankh-amen (XVIIIth Dynasty), evidently originally interred elsewhere, but hastily reburied when a religious revolution evicted the remains from the original resting place. The furniture and ornaments found were of extraordinary richness and beauty.

While the tomb of the private citizen was complete in itself, containing the Ka-statues and often the chapel, as well as the mummy, the royal tomb demanded something more elaborate in scale and arrangement. In some cases external structures of temple-form took the place of the underground chapel and serdab. The royal effigy, many times repeated in painting and sculpture throughout this temple-like edifice, and flanking its gateways with colossal seated figures, made buried Ka-statues unnecessary. Of these sepulchral temples three are of the first magnitude. They are that of **Queen Hatasu** (XVIIIth dynasty) at Deir-el-Bahari; that of **Rameses II** (XIXth dynasty), the **Ramesseum** near by to the southwest; and that of **Rameses III** (XXth dynasty) at Medinet Abou still further to the southwest. Like the tombs, these were all on the west side of the Nile; so also was the sepulchral temple of Amenophis III (XVIIIth dynasty), the **Amenopheum,** of which hardly a trace remains except the two seated colossi, 56 feet high, which once flanked the entrance to the forecourt of the temple of Amenophis. The complex plan of the Ramesseum is shown in Figure 8, and may be compared with those of other temples given on pp. 16 and 17. That of Medinet Abou resembles it closely. The Ramesseum occupies a rectangle of 590 × 182 feet; the temple of Medinet Abou measures 500 × 160 feet, not counting the extreme width of the entrance pylons. The temple of Hatasu at Deir-el-Bahari is partly excavated and partly structural, a model which is also followed on a smaller scale in several lesser tombs. Such an edifice is called a *hemispeos.*

CHAPTER III

EGYPTIAN ARCHITECTURE—*Continued.*

BOOKS RECOMMENDED: Same as for Chapter II.

TEMPLES. The surpassing glory of the New Empire was its great temples. Some of them were among the most stupendous creations of structural art. To temples rather than palaces were the resources and energies of the kings devoted, and successive monarchs found no more splendid outlet for their piety and ambition than the founding of new temples or the extension and adornment of those already existing. By the forced labor of thousands of *fellaheen* or serfs, architectural piles of vast extent could be erected within the lifetime of a monarch. As in the tombs the internal walls bore pictures for the contemplation of the Ka, so in the temples the external walls, for the glory of the king and the delectation of the people, were covered with colored reliefs reciting the monarch's glorious deeds. Internally the worship and attributes of the gods were represented in a similar manner, in endless iteration.

THE TEMPLE SCHEME. This is admirably shown in the temple of Khonsu, at Karnak, built by Rameses III (XXth dynasty), and in the temple of Edfou (Figs. 9 and 10), though this belongs to the Ptolemaic period. It comprised a sanctuary or *sekos*, a hypostyle (columnar) hall, known as the "hall of assembly," and a forecourt preceded by a double pylon or gateway. Each of these parts might be made more or less complex in different temples, but the essential features are encountered everywhere under all changes of form. The primitive concep-

tion of the temple was no doubt that of the house or dwelling of the deity, and this combination of courts, halls, passages and chambers was probably the mere amplification of the plans of early royal palaces, modified and extended to meet the requirements of the Egyptian ritual. The building of a temple began with the sanctuary, which contained the shrine of the god, with subordinate rooms for the priests. These chambers were low, dark, mysterious, accessible only to the priests and king. They were given a certain dignity by being raised upon a sort of platform above the general level, and

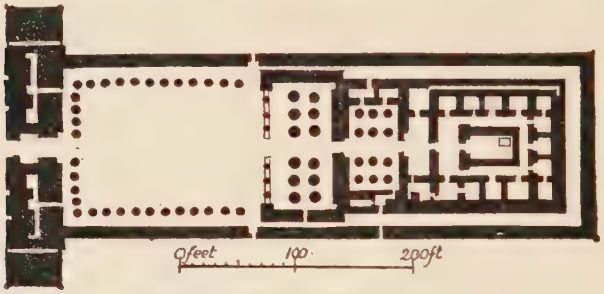

FIG. 9.—TEMPLE OF EDFOU. PLAN.

reached by a few steps. They were sumptuously decorated internally with ritual pictures in relief. The hall was sometimes loftier, but set on a slightly lower level; its massive columns supported a roof of stone lintels, and light was admitted either through clearstory windows under the roof of a central portion higher than the sides, as at Karnak, or over a low screen-wall built between the columns of the front row, as at Edfou and Denderah. This method was peculiar to the

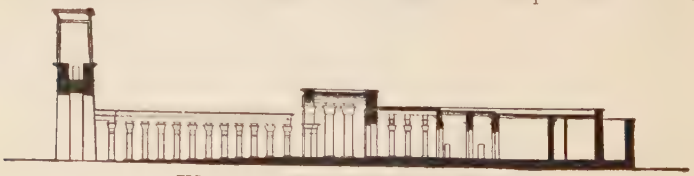

FIG. 10.—TEMPLE OF EDFOU. SECTION.

Ptolemaic and Roman periods. The court was usually surrounded by a single or double colonnade; sometimes, however, this colonnade only flanked the sides or fronted the hall, or again was wholly wanting. The *pylons* were twin buttress-like masses flanking the entrance gate of the court. They were shaped like oblong truncated pyramids, crowned by flaring cornices, and were decorated on the outer face with masts carrying banners, with obelisks, or with seated colossal figures of the royal builder. An avenue of sphinxes formed the approach

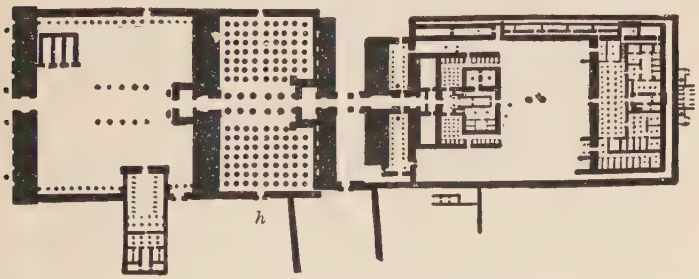

FIG. 11.—TEMPLE OF KARNAK. PLAN.

to the entrance, and the whole temple precinct was surrounded by a wall, usually of crude brick, pierced by one or more gates with or without pylons. The piety of successive monarchs was displayed in the addition of new hypostyle halls, courts, pylons, or obelisks, by which the temple was successively extended in length, and sometimes also in width, by the increased dimensions of the new courts. The great Temple of Karnak most strikingly illustrates this growth. Begun by Osourtesen (XIIth dynasty) nearly 2000 years B.C., it was not completed in its form until the time of the Ptolemies, when the last of the pylons and external gates were erected.

The variations in the details of this general type were numerous. Thus, at El Kab, the temple of Amenophis III has the sekos and

hall but no forecourt. At Deir-el-Medineh the hall of the Ptolemaic Hathor-temple is a mere porch in two parts, while the enclosure within the circuit wall takes the place of the forecourt. At Karnak all the parts were repeated several times, and under Amenophis III (XVIIIth dynasty) a wing was built at a nearly right angle to the main structure. At Luxor, to a complete typical temple were added three aisles of an unfinished hypostyle hall, and an elaborate forecourt, whose axis is inclined to that of the other buildings, owing to a bend of the river at that point. At Abydos a complex sanctuary of many chambers extends southeast at right angles to the general mass, and the first court is without columns. But in all these structures a certain unity of effect is produced by the lofty pylons, the flat roofs diminishing in height over successive portions from the front to the sanctuary, the sloping windowless walls covered with carved and painted pictures, and the dim and massive interiors of the columnar halls.

The size of these temples varies greatly. That of Karnak is over 1200 feet long; Luxor 850; the Ramesseum nearly 600; Abydos and Medinet Abou each 500; while the little temple of Dandour measured less than 50 feet in length.

TEMPLES OF KARNAK. Of these various temples that of **Amen-Ra** is incomparably the largest and most imposing. Its construction extended through the whole duration of the New Empire, of whose architecture it is a splendid *résumé* (Fig. 11). Its extreme length is 1,215 feet, and its greatest width 376 feet. The sanctuary and its accessories, mainly built by Thothmes I and Thothmes III, cover an area nearly 456 × 290 feet in extent, and comprise two hypostyle halls and countless smaller halls and chambers. It is preceded by a narrow columnar vestibule and two pylons enclosing a columnar atrium and two obelisks. This is entered from the **Great Hypostyle Hall** (*h* in Fig. 11; Fig. 12), the noblest single work of Egyptian architecture, measuring 340 × 170 feet, and containing 134 columns in six-

teen rows, supporting a massive stone roof. The central columns with bell-capitals are 70 feet high and nearly 12 feet in diameter; the others are smaller and lower, with lotus-bud capitals, supporting a roof lower than that over the three central aisles. A clearstory of stone-grated windows makes up the difference in height between these two roofs. The interior, thus lighted, was splendid with painted reliefs, which helped not only to adorn

FIG. 12.—CENTRAL PORTION OF HYPOSTYLE HALL AT KARNAK.
(From model in Metropolitan Museum, New York.)

the hall but to give scale to its massive parts. The whole stupendous creation was the work of three kings—Rameses I, Seti I, and Rameses II (XIXth dynasty).

In front of it was the great court, flanked by columns, and still showing the ruins of a central avenue of colossal pillars begun, but never completed, by the Bubastid kings of the XXIId dynasty. One or two smaller structures and the curious lateral wing built by Amenophis III interrupt the otherwise orderly and symmetrical advance of this plan from the sanctuary to the huge first pylon (last in point of date) erected by the Ptolemies.

The smaller temple of Khonsu, southwest of that of Amen-Ra, has already been alluded to as a typical example of templar design. Another temple, further south, is like Khonsu in plan,

but larger; west of this is a fourth, of smaller size. Next to Karnak in its importance comes the **Temple of Luxor** in its immediate neighborhood. It has two forecourts adorned with double-aisled colonnades and connected by what seems to be an unfinished hypostyle hall. The **Ramesseum** and the temples of **Medinet Abou** and **Deir-El-Bahari** have already been mentioned

FIG. 13.—GREAT TEMPLE OF IPSAMBOUL.

(p. 14). At Gournah and Abydos are the next most celebrated temples of this period; the first famous for its rich clustered lotus-columns, the latter for its beautiful sanctuary chambers, dedicated each to a different deity, and covered with delicate painted reliefs of the time of Seti I.

GROTTO TEMPLES. Two other styles of temple remain to be noticed. The first is the subterranean or grotto temple, of which the two most famous, at Ipsamboul (Abou-simbel), were excavated by Rameses II. They are truly colossal conceptions,

reproducing in the native rock the main features of structural temples, the court being represented by the larger of two chambers in the Greater Temple (Fig. 13). Their façades are adorned with colossal seated figures of the builder; the smaller has also two effigies of Nefert-Ari, his consort. Nothing more striking and boldly impressive is to be met with in Egypt than these singular rock-cut façades. Other rock-cut temples of more modest dimensions are at Addeh, Feraig, Beni-Hassan (the "Speos Artemidos"), Beit-el-Wali, and Silsileh. At Gherf-Hossein, Asseboua, and Derri are temples partly excavated and partly structural.

PERIPTERAL TEMPLES. The last type of temple to be noticed is represented by only three or four structures of moderate size; it is the *peripteral*, in which a small chamber is surrounded by columns, usually mounted on a terrace with vertical walls, They were mere chapels, but are among the most graceful of existing ruins. At Philæ are two structures, one by Nectanebo, the other Ptolemaic, resembling peripteral temples, but without cella-chambers or roofs. They may have been waiting-pavilions for the adjoining temples. That at Elephantine (Amenophis III) has square piers at the sides, and columns only at the ends. Another by Thothmes II, at Medinet Abou, formed only a part (the sekos?) of a larger plan. At Edfou is another, belonging to the Ptolemaic period.

LATER TEMPLES. After the architectural inaction of the Decadence came a marvellous recrudescence of splendor under the Ptolemies, whose Hellenic origin and sympathies did not lead them into the mistaken effort to impose Greek models upon Egyptian art. The temples erected under their dominion, and later under Roman rule, vied with the grandest works of the Ramessidæ, and surpassed them in the rich elaboration and variety of their architectural details. The temple at Edfou (Figs. 9, 10, 14) is the most perfectly preserved, and conforms most closely to the typical plan; that of Isis, at Philæ, is the

most elaborate and ornate. Denderah also possesses a group of admirably preserved temples of the same period. At Esneh, and at Kalabshé and Kardassy or Ghertashi in Nubia are others. In all these one notes innovations of detail and a striving for effect quite different from the simpler majesty of the preceding age (Fig. 14). One peculiar feature is the use of screen walls built into the front rows of columns of the hypostyle hall. Light was admitted above these walls, which measured about half the

FIG. 14.—EDFOU. FRONT OF HYPOSTYLE HALL.

height of the columns and were interrupted at the centre by a curious doorway cut through their whole height and without any lintel. Long disused types of capital were revived and others greatly elaborated; and the wall-reliefs were arranged in bands and panels with a regularity and symmetry rather Greek than Egyptian.

ARCHITECTURAL DETAILS. With the exception of a few purely utilitarian vaulted structures, all Egyptian architecture was based on the principle of the lintel. Artistic splendor depended upon the use of painted and carved pictures, and the decorative treatment of the very simple supports employed. Piers and columns sustained the roofs of such chambers as were

too wide for single lintels, and produced, in halls like those of Karnak, of the Ramesseum, or of Denderah, a stupendous effect by their height, massiveness, number, and colored decorations. The simplest piers were plain square shafts; others, more elaborate, had lotus-stalks and flowers or heads of Hathor carved upon them. The most striking were those against whose front faces were carved colossal figures of Osiris, as at Luxor, Medinet Abou, and Karnak (Fig. 15). The columns, which were seldom over six diameters in height, were treated with greater variety; the shafts, slightly tapering upward, were either round or clustered in section, and usually contracted at the base. The capitals with which they were crowned were usually of one of the five chief types described below. Besides round and clustered shafts, the Middle Empire and a few of the earlier monuments of the New Empire employed polygonal or slightly fluted shafts (see p. 11), as at Beni-Hassan and Karnak; these had a plain square abacus, with sometimes a cushion-like echinus beneath it. A round plinth served as a base for most of the columns.

FIG. 15.—OSIRIS PIER (MEDINET ABOU).

CAPITALS. The five chief types of capital were: *a*, the *campaniform* or inverted bell (central aisles at Karnak, Luxor, the Ramesseum); *b*, the clustered lotus-bud (Beni-Hassan, Karnak, Luxor, Gournah, etc.); *c*, the plain lotus-bud as at Karnak (Great Hall); *d*, the palm-capital, now known to be the oldest of all forms, revived in later temples; and *e*, the Hathor-headed, in which four heads of Hathor are surmounted by a model of a shrine (Sedinga, Edfou, Denderah, Esneh). These types (shown in Fig. 16) were richly embellished and varied by the Ptolemaic

architects, who gave a clustered or quatrefoil plan to the bell-capital, or adorned its surface with palm leaves. A few other forms are met with as exceptions.

Every part of the column was richly decorated in color Lotus-leaves or petals swathed the swelling lower part of the shaft, which was elsewhere covered with successive bands of carved pictures and of hieroglyphics. The capital was similarly covered with carved and painted ornament, usually of lotus-flowers or leaves, or alternate stalks of lotus and papyrus.

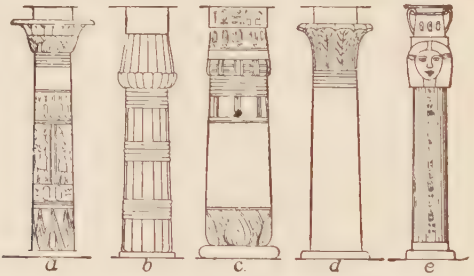

FIG. 16.—TYPES OF COLUMN.
a, Campaniform; b, Clustered Lotus-Column; c, Simple Lotus-Column; d, Palm-Column; e, Hathor-headed Column.

The lintels were plain and square in section, and often of prodigious size. Where they appeared externally they were crowned with a simple cavetto cornice, its carved surface covered with colored flutings, alternating with *cartouches* of hieroglyphics. Sometimes, especially on the screen walls of the Ptolemaic age, this was surmounted by a cresting of adders or uræi in closely serried rank. No other form of cornice or cresting is met with. Mouldings as a means of architectural effect were singularly lacking in Egyptian architecture. Beside the cavetto, the only moulding known is the clustered torus (*torus* = a convex moulding of semicircular profile), resembling a bundle of reeds tied together with cords or ribbons. It forms an astragal under the cavetto cornice and runs down the angles of the pylons and walls.

POLYCHROMY AND ORNAMENT. Color was absolutely essential to the decorative scheme. In the vast and dim interiors, as well as in the blinding glare of the sun, mere sculpture or relief would have been wasted. The application of brilliant color to pictorial forms cut in low relief, or outlined by deep incision with the edges of the figures delicately rounded (*intaglio rilievo*), was the most appropriate treatment possible. The walls and columns were covered with pictures treated in this way, and the ceilings and lintels were embellished with symbolic forms in the same manner. All the ornaments, as distinguished from the paintings, were symbolical, at least in their origin. Over the gateway was the solar disk or globe with widespread wings, the symbol of the sun winging its way to the conquest of night; upon the ceiling were sacred vultures, zodiacs, or stars spangled on a blue ground. Externally the temples presented only masses of unbroken wall; but these, as well as the pylons, were covered with huge pictures of a historical character. Only in the tombs do we find painted ornament of a purely conventional sort (Fig. 17). Rosettes, diaper patterns, spirals, and checkers are to be met with in them; but many of these can be traced to symbolic origins.

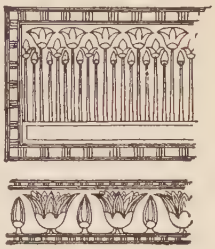

FIG. 17.—EGYPTIAN FLORAL ORNAMENT-FORMS.

DOMESTIC ARCHITECTURE. The only remains of palaces are the pavilion of Rameses III at Medinet Abou, and another at Semneh. The Royal Labyrinth has so completely perished that even its site is uncertain. The Egyptians lived so much out of doors that the house was a less important edifice than in colder climates. Egyptian dwellings were probably in most cases built of wood or crude brick, and their disappearance is thus easily explained. Relief pictures on the monuments indicate the use of wooden framing for the walls, which were

probably filled in with crude brick or panels of wood. The larger houses had extensive plans with outer and inner courts surrounded by porticoes and by the various halls and chambers for the family, guests and dependents. The larger halls probably had wooden ceilings supported by wooden posts, which, like the walls of framed wood or of unbaked brick, have long since perished. The architecture was probably simple. Gateways like those of the temples on a smaller scale, the cavetto cornice on the walls, and occasionally carved columns of wood or stone, were the only details pretending to architectural splendor. The ground-plans of many houses in ruined cities as at Tel-el-Amarna and a nameless city of Amenophis IV, are discernible in the ruins; but the superstructures are wholly wanting.

MONUMENTS. The principal necropolis regions of Egypt are centred about Ghizeh and ancient Memphis for the Old Empire (pyramids and mastabas), Thebes for the Middle Empire (Silsileh, Beni-Hassan), and Thebes (Vale of the Kings, Vale of the Queens) and Abydos for the New Empire.

The Old Empire has also left us the Sphinx, Sphinx temple, a few other pyramid temples, and the temple at Meidoum.

The most important temples of the New Empire were those of Karnak (the great temple, the temple of Khonsu, by Rameses III), the "southern temple" and temple of Apet, of Luxor (Rameses II), Medinet Abou (great temple of Rameses III, lesser temples of Thothmes II and III with peripteral sekos; also Pavilion of Rameses III); of Abydos (Seti I and Rameses II); of Gournah; of Eilithyia (Amenophis III); of Soleb and Sesebi in Nubia; of Elephantine (peripteral, by Amenophis III); the tomb temple of Queen Hatasu at Deir-el-Bahari, the Ramesseum (Rameses II); the Amenopheum (Amenophis III); hemispeos at Gherf Hossein; two grotto temples at Ipsamboul (Rameses II).

At Meroë are pyramids of the Ethiopic kings of the Decadence.

Temples of the Ptolemaic period; Philæ, Denderah, Edfou.

Temples of the Roman period; Koum Ombos; Kalabshé, Kardassy and Dandour in Nubia; Esneh.

CHAPTER IV

CHALDÆAN AND ASSYRIAN ARCHITECTURE

BOOKS RECOMMENDED: Babelon, *Manual of Oriental Antiquities.* Benoît, *Architecture: Antiquité.* Botta and Flandin, *Monuments de Ninive.* Handcock, *Mesopotamian Archæology.* Layard, *Discoveries in Nineveh and Its Remains.* Koldewey, *The Excavations at Babylon.* Perrot and Chipiez, *History of Art in Chaldæa and Assyria.* Peters, *Nippur.*

SITUATION; HISTORIC PERIODS. The Tigro-Euphrates valley was the seat of a civilization nearly or quite as old as that of the Nile, though inferior in its monumental art. The kingdoms of Chaldæa and Assyria which ruled in this valley, sometimes as rivals and sometimes as subjects one of the other, differed considerably in character and culture. But the scarcity of timber and the lack of good building-stone except in the limestone table-lands and more distant mountains of upper Mesopotamia the abundance of clay, and the flatness of the country, imposed upon the builders of both nations similar restrictions of conception, form and material. Both peoples, moreover, were probably, in part at least, of Semitic race.* The Chaldæans had attained a high civilization before 3000 B.C.—the presumable date of the earliest remains at Lagash (modern Tello)—and had for centuries maintained fixed institutions and practised the arts and sciences when they were conquered by the Assyrians.

* This is denied by some recent writers, so far as the Chaldæans are concerned, and is not intended here to apply to the Accadians and Summerians of primitive Chaldæa.

The history of Chaldæo-Assyrian art may be divided into three main periods, as follows:

1. The EARLY CHALDÆAN, 3000 to 1250 B.C.

2. The ASSYRIAN, 1250 to 606 B.C. (divided into two sub-periods by an Aramæan invasion 1050–900).

3. The BABYLONIAN, 606 to 538 B.C.

In 538 the empire fell before the Persians.;

GENERAL CHARACTER OF MONUMENTS. Excavations at Tello and at Nippur (Niffer), the sacred city of Chaldæa, have uncovered ruins nearly as old as the Pyramids. Though of slight importance architecturally, they reveal the early knowledge of the arch and the possession of an advanced culture. The region afforded only the most limited resources for architectural effect. Owing to the flatness of the country and the impracticability of building lofty structures with sun-dried bricks, elevation above the plain could be secured only by erecting buildings of moderate height upon enormous mounds or terraces, built of crude brick and faced with hard brick or stone. This led to the development of the stepped pyramid, typical in Chaldæo-Assyrian architecture. Thick walls were necessary both for stability and for protection from the burning heat of that climate. The lack of stone for columns and the difficulty of procuring heavy beams for long spans made broad halls and chambers impossible. The plans of Assyrian palaces look like assemblages of long corridors and small cells (Fig. 18). Neither the wooden post nor the column played any part in this architecture except for window-mullions and subordinate members.* It is probable that the vault was used for roofing many of the halls; the arch was certainly employed for doors and the barrel-vault for the drainage-tunnels under the terraces, made

* See Fergusson, *Palaces of Nineveh and Persepolis*, for an ingenious but unsubstantiated argument for the use of columns in Assyrian palaces.

necessary by the heavy rainfall. What these structures lacked in durability and height was made up in decorative magnificence. The interior walls were wainscoted to a height of eight or nine feet with alabaster slabs covered with those low-relief pictures of hunting scenes, battles, and gods, which now enrich

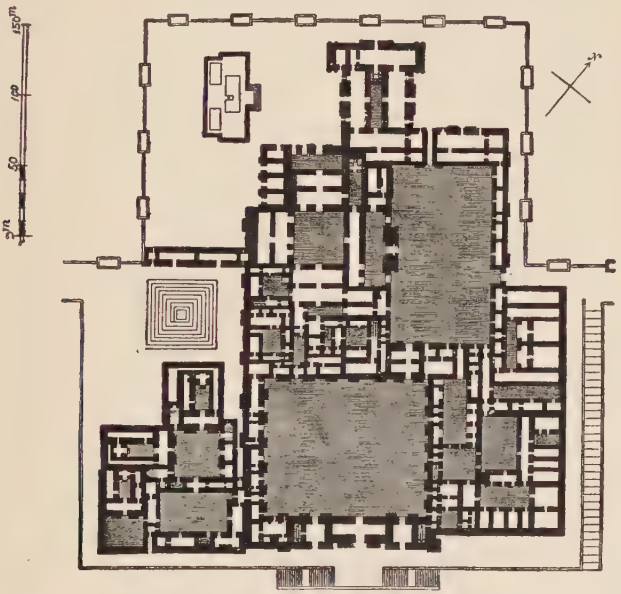

FIG. 18.—PALACE OF SARGON AT KHORSABAD.

the museums of London, Paris, and other modern cities. Elsewhere painted plaster or more durable enamelled tile in brilliant colors embellished the walls, and, doubtless, rugs and tapestries added their richness to this architectural splendor.

CHALDÆAN ARCHITECTURE. Besides remains at Tello, including a stepped pyramid or *ziggurat*, and a variety of ruins at Nippur, there are ruins at Mugheir (the Biblical Ur), dating, perhaps, from 2200 B.C., of the two-storied terrace or platform

of a temple to Sin or Hurki, with walls faced with enamelled tile. At Warka (the ancient Erech) are two terrace-walls of palaces, one of which is ornamented with convex flutings and with a species of mosaic in checker patterns and zigzags, formed by terra-cotta cones or spikes driven into the clay, their exposed bases being enamelled in the desired colors. The other shows a system of long, narrow panels, in a style suggesting the influence of Egyptian models through some as yet unknown channel. This paneling became a common feature of the later Assyrian art (see Fig. 19). At Birs-Nimroud are the ruins of a stepped pyramid surmounted by a small shrine. Its seven stages are said to have been originally faced with glazed tile of the seven planetary colors, gold, silver, yellow, red, blue, white, and black. At Babylon, the later capital of Chaldæa, to which the shapeless mounds of Mujelibeh and Kasr seem to have belonged, there are remains of houses of the early period, though the most important remains belong to the later Babylonian period.

ASSYRIAN ARCHITECTURE. Abundant ruins exist of Nineveh, the Assyrian capital, and its adjacent palace-sites. Excavations at Koyunjik, Khorsabad, and Nimroud have laid bare a number of these royal dwellings. Among them are the palace of Assur-nazir-pal (885 B.C.) and two palaces of Shalmaneser II (850 B.C.) at Nimroud; the great palace of Sargon at Khorsabad (721 B.C.); that of Sennacherib at Koyunjik (704 B.C.); of Esarhaddon at Nimroud (650 B.C.); and of Assur-bani-pal at Koyunjik (660 B.C.) All of these palaces are designed on the same general principle, best shown by the plan (Fig. 18) of the palace of Sargon at Khorsabad, excavated by Botta and Place.

In this palace two large and several smaller courts are surrounded by a complex series of long, narrow halls and small, square chambers. One court probably belonged to the harem, another to the king's apartments, others to dependents and to the service of the palace. The crude brick walls are immensely thick and without windows, the only openings being for doors.

The rarity of columns made wide halls impossible, and great size could only be attained in the direction of length. A terraced pyramid supported an altar or shrine to the southwest of the palace; at the west corner was a temple, the substructure of which was crowned by a cavetto cornice showing plainly the influence of Egyptian models. The whole palace stood upon a stupendous platform faced with cut stone, an unaccustomed extravagance in Assyria.

ARCHITECTURAL DETAILS. There is no evidence that the Assyrians ever used columnar supports except in minor or acces-

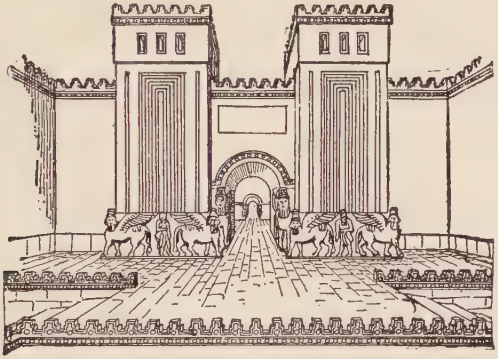

FIG. 19.—GATE, KHORSABAD.

sory details. There are few halls in any of the ruins too wide to be spanned by good Syrian cedar beams or palm timbers, and these few cases seem to have had vaulted ceilings. So clumsy a feature as the central wall in the great hall of Esarhaddon's palace at Nimroud would never have been resorted to for the support of the ceiling had the Assyrians been familiar with the use of columns. That they understood the arch and vault is proved by their admirable terrace-drains and the fine arched gate in the walls of Khorsabad (Fig. 19), as well as by bas-reliefs representing dwellings with domes of various forms.

Moreover, a few vaulted chambers of moderate size, and fallen fragments of crude brick vaulting of larger span, have been found in several of the Assyrian ruins.

The construction was extremely simple. The heavy clay walls were faced with alabaster, burned brick, or enamelled tiles. The roofs were probably covered with stamped earth, and sometimes paved on top with tiles or slabs of alabaster to form terraces. Light was introduced most probably through windows immediately under the roof and divided by small columns forming mullions, as suggested by certain relief pictures. No other system seems consistent with the windowless walls of the ruins. It is possible that many rooms depended wholly on artificial light or on the scant rays coming through open doors. To this day, in the hot season the population of Mosul takes refuge from the torrid heat of summer in windowless basements lighted only by lamps.

ORNAMENTS. The only structural decorations seem to have been the paneling of exterior walls in a manner resembling the Chaldæan terrace-walls, and a form of parapet like a stepped cresting. There were no characteristic mouldings, architraves, capitals, or cornices. Nearly all the ornament was of the sort called *applied, i.e.*, added after the completion of the structure itself. Pictures in low relief covered the alabaster revetment. They depicted hunting-scenes, battles, deities, and other mythological subjects, and are interesting to the architect mainly for their occasional representations of buildings and details of construction. Above this wainscot were friezes of enamelled brick ornamented with symbolic forms used as decorative motives; winged bulls, the "sacred tree" and mythological monsters, with rosettes, palmettes, lotus-flowers, and *guilloches* (ornaments of interlacing bands winding about regularly spaced buttons or eyes). These ornaments were also used on the archivolts around the great arches of palace gates. The most singular adornments of these gates were the carved "portal-guardians" set into deep jambs—colossal monsters with the bodies of bulls, the wings of

eagles, and human heads of terrible countenance. Of mighty bulk, they were yet minutely wrought in every detail of head-dress, beard, feathers, curly hair, and anatomy.

The purely conventional ornaments mentioned above—the rosette, guilloche, and lotus-flower, and probably also the palmette—were derived from Egyptian originals. They were treated, however, in a quite new spirit and adapted to the special materials and uses of their environment. Thus the form of the palmette, even if derived, as is not unlikely, from the Egyptian lotus-motive, was assimilated to the more familiar palm-forms of Assyria (Fig. 20).

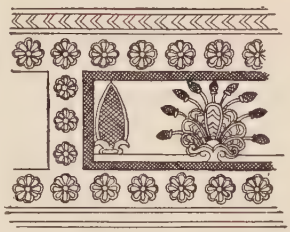

FIG. 20.—ASSYRIAN ORNAMENT.

In the later Babylonian architecture, of which recent excavations have uncovered imposing remains of gates, walls, palaces and temples, a new and striking kind of decoration was introduced. The walls were externally faced with bricks whose faces were so modeled and enameled as to form collectively huge mural pictures of deities, warriors, beasts and monsters in low relief. The Persians later copied and developed this system (see p. 35).

MONUMENTS. The most important Chaldæan and Assyrian monuments of which there are extant remains, have already been enumerated in the text. It is therefore unnecessary to duplicate the list here.

CHAPTER V

PERSIAN, LYCIAN, AND JEWISH ARCHITECTURE

BOOKS RECOMMENDED: As before, Babelon. Also Bliss, *Excavations at Jerusalem.* Dieulafoy, *L'Art antique de la Perse,* and *L'Acropole de Suse.* Flandin et Coste, *Perse ancienne.* Jackson, *Persia Past and Present.* Perrot and Chipiez, *History of Art in Persia; History of Art in Phrygia, Lydia, Caria, and Lycia; History of Art in Sardinia and Judæa.* Texier, *L'Arménie et la Perse; L'Asie Mineure.* De Vogüé, *Le Temple de Jérusalem.*

PERSIAN ARCHITECTURE. With the Persians, who under Cyrus (536 B.C.) and Cambyses (525 B.C.) became the masters of the Orient, the Aryan race superseded the Semitic, and assimilated in new combinations the forms it borrowed from the Assyrian civilization. Under the Achæmenidæ (536 to 430 B.C.) palaces were built in Persepolis and Susa of a splendor and majesty impossible in Mesopotamia, and rivalling the marvels in the Nile valley. The conquering nation of warriors who had overthrown the Egyptians and Assyrians were in turn conquered by the arts of its vanquished foes, and speedily became the most luxurious of all nations. The Persians were not great innovators in art; but inhabiting a land of excellent building resources, they were able to combine the Egyptian system of interior columns with details borrowed from Assyrian art, and suggestions, derived most probably from the general use in Persia and Central Asia, of wooden posts or columns as intermediate supports. Out of these elements they evolved an architecture which has only become fully known to us since the excavations of M. and Mme. Dieulafoy at Susa in 1882.

ELEMENTS OF PERSIAN ARCHITECTURE. The Persians used both crude and baked bricks, the latter far more freely than was practicable in Assyria, owing to the greater abundance of fuel. Walls of crude brick were faced with baked brick enamelled in brilliant colors, or both moulded and enamelled, to form colored pictures in relief, after the Babylonian fashion. Stone was employed for walls and columns, and for the jambs and lintels of doors and windows. Architraves and ceiling-beams were of wood. The palaces were erected, as in Assyria, upon broad platforms, partly cut in the rock and partly structural, approached by imposing flights of steps. These palaces were composed of detached buildings, propylæas or gates of honor, vast audience-halls, called *apadanas*, open on one or two sides, and chambers or dwellings partly enclosing or flanking these halls, or grouped in separate buildings. Temples appear to have been of small importance, perhaps owing to habits of out-of-door worship of fire and sun. There are few structural tombs, but there are a number of imposing royal sepulchres cut in the rock at Naksh-i-Roustam.

ARCHITECTURAL DETAILS. The Persians, like the Egyptians, used the column as an internal feature in hypostyle halls of great size, and externally to form porches, and perhaps, also, open kiosks without walls. The great **Hall of Xerxes** at Persepolis covers 100,000 square feet—more than double the area of the Hypostyle Hall at Karnak. But the Persian column was derived from wooden prototypes and used with wooden architraves, permitting a wider spacing than is possible with stone. In the present instance thirty-six columns sufficed for an area nearly equal to that which in the Karnak hall contained one hundred and thirty-four. The shafts being slender and finely fluted instead of painted or carved, the effect produced was totally different from that sought by the Egyptians. The most striking peculiarity of the column was the capital, which was forked (Fig. 21). In one of the two principal types the fork, formed by

the coupled fore-parts of bulls or symbolic monsters, rested directly on the top of the shaft. In the other, two singular members were interposed between the fork and the shaft; the lower, a sort of double bell or bell-and-palm capital, and above it, just beneath the fork, a curious combination of vertical scrolls or volutes, resembling certain ornaments seen in Assyrian furniture. The transverse architrave rested in the fork; the longitudinal architrave was supported on the heads of the monsters. A rich moulded base, rather high and in some cases adorned with carved leaves or flutings, supported the columns, which in the Hall of Xerxes were over 66 feet high and 6 feet in diameter. The architraves have perished, but the rock-cut tomb of Darius at Naksh-i-Roustam reproduces in its façade a palace-front, showing a banded architrave with dentils—an obvious imitation of the ends of wooden rafters on a lintel built up of several beams.

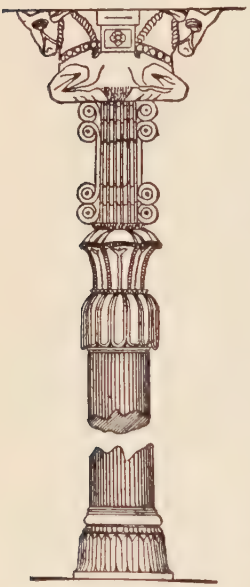

FIG. 21.—COLUMN FROM PERSEPOLIS.

These features of the architrave, as well as the fine flutings and moulded bases of the columns, are found in Ionic architecture, and in part, at least, in Lycian tombs. As all these examples date from nearly the same period, the origin of these forms and their mutual relations have not been fully determined. The Persian capitals, however, are unique, and so far as known, without direct prototypes or derivatives. Their constituent elements may have been borrowed from various sources. One can hardly help seeing the Egyptian palm-capital in the lower member of the compound type (Fig. 21).

The doors and windows had banded architraves or trims and cavetto cornices very Egyptian in character. The portals were flanked, as in Assyria, by winged monsters; but these were built up in several courses of stone, not carved from single blocks like their prototypes. Plaster or, as at Susa, enamelled bricks, replaced as a wall-finish the Assyrian alabaster wainscot. These bricks, splendid in color, moulded into relief pictures covering large surfaces, and used more generally on exterior walls than for interior decoration, are the oldest examples of the skill of the Persians in a branch of ceramic art in which they have always excelled down to our own day.

LYCIAN ARCHITECTURE. None of the other peoples of Western Asia developed a complete and independent style or produced monuments of the first rank. The Cypriotes, Phoenicians, and Lycians, however, played a certain part as intermediaries between the styles of Egypt and Assyria and the later art of Greece. From Cyprus the Greeks learned little beyond a few elementary notions regarding sculpture and pottery, although it is claimed by some that the volute-form in Ionic architecture was originally derived from patterns on Cypriote pottery and from certain Cypriote steles, where it appears as a modified lotus motive. The Phoenicians were the world's traders from a very early age down to the Persian conquest. They not only distributed through the Mediterranean lands the manufactures of Egypt and Assyria, but also counterfeited them and adopted their forms in decorating their own wares. But they have bequeathed us not a single architectural ruin of importance, either of temple or palace, nor are the few tombs still extant of sufficient artistic interest to deserve even brief mention in a work of this scope.

In Lycia, however, there arose a system of tomb-design which came near creating a new architectural style, and which doubtless influenced both Persia and the Ionian colonies. The tombs were mostly cut in the rock, though a few are free-standing

monolithic monuments, resembling sarcophagi or small shrines mounted on a high base or pedestal.

In all of these tombs we recognize a manifest copying in stone of framed wooden structures. The roofs are often gabled, sometimes in the form of a pointed arch; they generally show a banded architrave, dentils, and a raking cornice, or else an imitation of broadly projecting eaves with small round rafters. There are several with porches of Ionic columns; of these, some are of late date and evidently copied from Asiatic Greek models. Others, and notably one at Telmissus, seem to be examples of a primitive Ionic, and may indeed have been early steps in the development of the splendid style which the Ionic Greeks, both in Asia Minor and in Attica, carried to such perfection.

Mention should also be made of certain rock-cut tombs in Phrygia with façades carved on the face of the cliff with all-over patterns suggesting a textile origin, and with a low-pitched pediment carved above this patterning, *e.g.* the so-called "Tomb Midas," and others at Doghanlou, etc.

JEWISH ARCHITECTURE. The Hebrews borrowed from the art of every people with whom they had relations, so that we encounter nothing like an independent national style. Among the most interesting remains are tombs of various periods near Jerusalem, erroneously ascribed by popular tradition to the judges, prophets, and kings of Israel. Some of them are structural, some cut in the rock; the former (tomb of Absalom, of Zechariah) decorated with Doric and Ionic engaged orders, are now recognized to be debased imitations of late Greek work. They have Egyptian cavetto cornices and pyramidal roofs, like many Asiatic tombs. The openings of the rock-cut tombs have frames or pediments carved with rich surface ornament showing a similar mixture of types—Roman triglyphs and garlands, Syrian-Greek acanthus leaves, conventional foliage of Byzantine character, and naturalistic carvings of grapes and local plant life. The carved arches of two of the ancient city gates

(one the so-called Golden Gate) in Jerusalem display rich acanthus foliage somewhat like that of the tombs, but more vigorous and artistic. If of the time of Herod or even of Constantine, as claimed by some, they would indicate that Greek artists in Syria created the prototypes of Byzantine ornament.

The one great achievement of Jewish architecture was the national **Temple of Jehovah,** represented by three successive edifices on Mount Moriah, the site of the present so-called "Mosque of Omar." The first, built by Solomon (1012 B.C.) appears from the Biblical description* to have combined Egyptian conceptions (successive courts, lofty entrance-pylons, the Sanctuary and the sekos or "Holy of Holies") with Phoenician and Assyrian details and workmanship (cedar wood-work, empaistic decoration or overlaying with *repoussé* metal work, the isolated brazen columns Jachin and Boaz). The whole stood on a mighty platform built up with stupendous masonry and vaulted chambers from the valley surrounding the rock on three sides. This precinct was nearly doubled in size by Herod (18 B.C.) who extended it southward by a terrace-wall of still more colossal masonry. Some of the stones are twenty-two feet long; one reaches the prodigious length of forty feet. The "Wall of Lamentations" is a part of this terrace, upon which stood the Temple on a raised platform. As rebuilt by Herod, the Temple reproduced in part the antique design, and retained the porch of Solomon along the east side; but the whole was superbly reconstructed in white marble with abundance of gilding. Defended by the Castle of Antonia on the northwest, and embellished with a new and imposing triple colonnade on the south, the whole edifice, a conglomerate of Egyptian, Assyrian, and Roman conceptions and forms, was one of the most singular and yet magnificent creations of ancient art.

The temple of Zerubbabel (515 B.C.), intermediate between those above described, was probably less a re-edification of the

* 1 Kings vi-vii; 2 Chronicles iii-iv.

first, than a new design. While based on the scheme of the first temple, it appears to have followed more closely the pattern described in the vision of Ezekiel (chapters xl-xlii). It was far inferior to its predecessor in splendor and costliness. No vestiges of it remain.

MONUMENTS. PERSIAN: at Murghab, the tomb of Cyrus, known as Gabré-Madré-Soleiman—a gabled structure on a seven-stepped pyramidal basement (525 B.C.). At Persepolis the palace of Darius (521 B.C.); the Propylæa of Xerxes, his palace and his harem (?) or throne-hall (480 B.C.), one of the most imposing architectural groups in the world. At various points, tower-like tombs, supposed erroneously by Fergusson to have been fire altars. At Naksh-i-Roustam, the tomb of Darius, cut in the rock. Other tombs near by at Persepolis proper and at Pasargadæ. At the latter place remains of the palace of Cyrus. At Susa the palace of Xerxes and Artaxerxes (480-405 B.C.).

LYCIAN: the principal Lycian monuments are found in Myra, Antiphellus, and Telmissus. Some of the monolithic tombs have been removed to the British and other European museums.

JEWISH: the temples have been mentioned above. The palace of Solomon. The rock-cut monolithic tomb of Siloam. So-called tombs of Absalom and Zechariah, structural; probably of Herod's time or later. Rock-cut tombs of the Kings; of the Prophets, etc. City gates (Herodian or early Christian period).

CHAPTER VI

GREEK ARCHITECTURE

BOOKS RECOMMENDED: Anderson and Spiers, *Architecture of Greece and Rome.* Baumeister, *Denkmäler der klassischen Alterthums.* Bell, *Manual of Hellenic Architecture.* Chipiez, *Histoire critique des ordres grecs.* Curtius and Adler, *Olympia; die Ergebnisse der Ausgrabung.* Durm, *Baukunst der Griechen* (in *Handbuch d. Arch.*). E. A. Gardner, *Ancient Athens.* P. Gardner, *Principles of Greek Art.* Goodyear, *Greek Refinements.* Hall, *Aegean Archæology.* Marquand, *Greek Architecture.* Penrose, *An Investigation, etc., of Athenian Architecture.* Perrot and Chipiez, *History of Art in Primitive Greece; La Grèce de l'Épopée; La Grèce archaique.* Schliemann, *Mycenæ; Ilios.* Schuchardt, *Schliemann's Excavations.* Stuart and Revett, *Antiquities of Athens.* Tarbell, *History of Greek Art.* Tsountas and Manatt, *The Mycenæan Age.* Warren, *The Foundations of Classical Architecture.* Wilkins, *Antiquities of Magna Græcia.*

GENERAL CONSIDERATIONS. Greek art marks the beginning of European civilization. The Hellenic race gathered up influences and suggestions from both Asia and Africa and fused them with others, whose sources are unknown, into an art intensely national and original, which was to influence the arts or many races and nations long centuries after the decay of the Hellenic states. The Greek mind, compared with the Egyptian or Assyrian, was more highly intellectual, more logical, more symmetrical, and above all more inquiring and analytic. Living nowhere remote from the sea, the Greeks became sailors, merchants, and colonizers. The Ionian kinsmen of the European Greeks, speaking a dialect of the same language, populated the coasts of Asia Minor and many of the islands, so that through them the Greeks were open to the influences of the

Assyrian, Phœnician, Persian, and Lycian civilizations. In Cyprus they encountered Egyptian influences, and finally, under Psammetichus, they established in Egypt itself the Greek city of Naukratis. They were thus by geographical situation, by character, and by circumstances, peculiarly fitted to receive, develop, and transmit the mingled influences of the East and the South.

PRE-HELLENIC STYLES: THE AEGEAN CULTURE. Authentic Greek history begins with the first Olympiad, 776 B.C. The history of the long period of developing culture preceding that date was wholly unknown, otherwise than through legends and the Homeric poems, until the researches of Schliemann and his successors, and in still more recent years the Cretan discoveries of Evans, uncovered the remains of the prehistoric cities of Troy, in Asia Minor, Mycenæ and Tiryns, in Greece, and of Knossos in Crete, and revealed the existence of an Eastern Mediterranean or **Aegean** culture extending back over 3,000 years B.C., already in its decline at the time of the Homeric wars. It belongs to the bronze age, and reached its culmination during the time of the XVIII and XIX dynasties in Egypt, about 1600–1300 B.C. Its long decline began with the introduction of iron into the Mediterranean countries, and it seems to have been finally submerged by the Dorian migration of the end of the 12th century B.C. It borrowed much from Egypt, with which the primitive Greeks of the Aegean countries

FIG. 22.—LION GATE AT MYCENÆ.

and islands maintained an active commerce; but it is believed to have been largely an independent civilization, for it displays a purely Western vivacity and originality. The swords, gold jewels, carved gems ("island stones"), bronzes and pottery, as well as the architectural remains, display these qualities in a marked degree.

The entire period of this development divides naturally into two main sub-periods: that in which Crete was the leader, called the Cretan or **Minoan** age (from the name of the legendary King Minos); and the **Mycenæan,** in which, after the destruction of Knossos in Crete in 1400 B.C., the cities of Mycenæ and Tiryns reached their culmination.

CRETAN MONUMENTS. The most important are at Knossos, the Minoan capital; others have been explored at Phaistos, Gournia, Hagia Triada, by Evans and others. They reveal a singular absence of religious edifices, and consist chiefly of palaces, with a few tombs. The great **Palace of Knossos,** constructed of stone, is a complex of chambers, courts, porticoes and stairways, wholly destitute of systematic logical planning, but revealing in scattered fragments the existence at least 2000 B.C. of a highly developed artistic and material civilization, in which the drainage and plumbing were of almost modern character. But the only architectural form these ruins have bequeathed to us is that of the wooden columns, which are shown by the Cretan paintings to have tapered downwards and to have had capitals of the type shown in Fig. 22. The fire of 1400 B.C. destroyed these columns, but their disk-bases are still *in situ.*

MYCENÆAN ARCHITECTURE. Between 1500 and 1200 B.C. The cities of Mycenæ, Tiryns, Argos and Orchomenos in Greece and of Troy (Ilios) in Asia Minor rose to the leadership in Grecian civilization, under the domination of a race now generally believed to have been the Achæan, the earliest wave of the Hellenic peoples in Greece.

Fortifications, houses, palaces, and tombs make up the ruins thus far discovered in these centers. The houses consisted of a hall or *megaron* with four columns about the central hearth (whence, no doubt, the atrium and peristyle of Roman houses, through their Greek intermediary prototypes) and a porch or *aithousa*, with or without columns *in antis*, opening directly into the *megaron*, or indirectly through an ante-room called the *prodomos*. Here we have the prototypes of the Greek temple *in antis*, with its *naos* having interior columns, whether roofed over or hypæthral (see pp. 56, 57). The use of timber for certain of the structural details led in time to many of the forms later developed in stone in the entablature of the Doric order. But it is hard to discover, as Dörpfeld would have it, in the slender Mycenæan columns with their inverted taper, the prototype of the massive Doric column with its upward taper. The Mycenæan column was apparently derived from Cretan wooden models, the sturdy Doric column from stone or rubble piers (see p. 51).

The *gynecæum*, or women's apartments, the men's apartments, and the bath were in these ancient palaces grouped in varying relations about the *megaron:* their plan, purpose, and arrangement are clearly revealed in the ruins of Tiryns, where they are more complete and perfect than either at Troy or Mycenæ.

FORTIFICATIONS AND WALLS. The most imposing remains of Mycenæan architecture are the acropolis fortifications and city walls of **Mycenæ** and **Tiryns.** At the latter place the walls of huge stones, piled without cement, contain passages covered by stones successively corbelled out until they meet overhead. At Mycenæ the city wall is pierced by the remarkable **Lion Gate** (Fig. 22), consisting of two jambs and a huge lintel, over which the weight is relieved by a triangular opening. This is filled with a sculptured group, now much defaced, representing two rampant lions flanking a downward-tapering

column. This symbolic group has relations with Hittite and Phrygian sculptures, and with the symbolism of the worship of Rhea Cybele. The masonry of this wall is carefully dressed but not regularly coursed. Other primitive walls and gates showing openings and embryonic arches of various forms, are found widely scattered, at Samos and Delos, Argos and many other points. The very earliest are hardly more than random piles of rough stone. Those which may fairly claim notice for their artistic masonry are of a later date and of three kinds: the coursed, the polygonal, and the uncoursed or Cyclopean, so called from the tradition that they were built by the Cyclopes. The polygonal walls were composed of large, irregular polygonal blocks carefully fitted together and dressed to a fairly smooth face, as at Mycenæ (Fig. 23). The Cyclopean masonry, of huge irregular stones with smaller pieces to wedge the interstices, is illustrated by the walls of Tiryns. All three kinds were used contemporaneously, though in the course of time the regular coursed masonry finally superseded the polygonal.

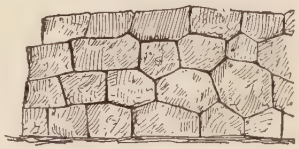

FIG. 23.—POLYGONAL MASONRY.

THOLOS OF ATREUS. All these structures present, however, only the rudiments of architectural art. The so-called **Tholos** (or Treasury) of **Atreus,** at Mycenæ, on the other hand, shows the germs of truly artistic design (Fig. 24). It is in reality a tomb, and is one of a large class of prehistoric tombs found in almost every part of the globe, consisting of a circular stone-walled and stone-roofed chamber buried under a tumulus of earth. This one is a beehive-shaped construction of horizontal courses of masonry, with a stone-walled passage, the *dromos,* leading to the entrance door. Though internally of domical form, its construction with horizontal beds in the

masonry proves that the idea of the true dome with the beds of each course pitched at an angle always normal to the curve of the vault, was not yet grasped. A small sepulchral chamber opens from the great one, by a door with the customary relieving triangle over it.

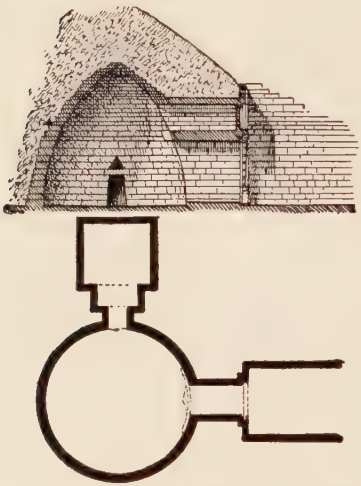

FIG. 24.—THOLOS OF ATREUS. PLAN AND SECTION.

Traces of a metal lining have been found on the inner surface of the dome and on the jambs of the entrance-door. This entrance is the most artistic and elaborate part of the edifice (Fig. 25). The main opening is enclosed in a three-banded frame, and was once flanked by half columns which tapered downward as in the sculptured column over the Lion Gate. Shafts, bases, and capitals were covered with zig-zag bands or chevrons of fine spirals. This well-studied decoration, the banded jambs, and the curiously inverted columns (of which several other examples exist in or near Mycenæ), all point to a fairly developed art, derived partly from Egyptian and partly from local or possibly Asiatic sources. That Egyptian influences had affected this early art is further proved by a fragment of carved and painted ornament on an alabaster ceiling in Orchomenos, imitating with

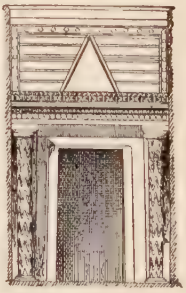

FIG. 25.—THOLOS OF ATREUS. DOORWAY.

remarkable closeness certain ceiling decorations in Egyptian tombs. This fragment was found in a "beehive" tomb analogous to that of Mycenæ.*

Few other details of the Aegean architecture have been preserved. Certain alabaster fragments display a peculiar ornament like a diglyph flanked by half-rosettes encircled by a guilloche. The columns had well-defined bases and capitals, but show little if any analogy to the columns of later Greek art. Except for the ceiling in the Orchomenos tomb there is little evidence of influences from Egyptian architecture. This is the more notable as the chief buildings of Mycenæ and Tiryns belong to the 13th and 12th centuries B.C., the period of Egyptian greatness under the second Theban monarchy, and it argues for the independent development of this art.

With the Dorian migration (*cir.* 1100 B.C.) the Mycenæan culture, the Homeric civilization and the Age of Bronze, came to an end. The Dorians conquered with weapons of iron, and with them the Age of Iron may be said to have begun in Europe. The artistic revival of the eighth century under the Ionian Greeks in Rhodes and Melos produced no architecture that has come down to us. There is a nearly complete sundering between the Mycenæan architecture and the historic architecture of Greece. The end of the one and beginnings of the other are alike shrounded in uncertainty.

CLASSIC GREEK MONUMENTS: THE ORDERS. It was the Dorians and Ionians who developed the architecture of classic Greece. This fact is perpetuated in the traditional names, Doric and Ionic, given to the two systems of columnar design which formed the most striking feature of that architecture.

* The columns and other fragments of the doorway of the Tholos of Atreus, long lost in England, were in 1904 recovered and set up in the British Museum, under the direction of the late R. Phené Spiers, F.R.I.B.A., to whom I am indebted for the restoration reproduced in Figure 25.

While in Egypt the column was used almost exclusively as an internal support and decoration, in Greece it was chiefly employed to produce an imposing exterior effect. It was the most important element in the temple architecture of the Greeks, and an almost indispensable adornment of their gateways, public squares, and temple enclosures. To the column the two races named above gave each a special and radically distinct development, and it was not until the Periclean age that the two forms came to be used in conjunction, even by the mixed Doric-Ionic people of Attica. Each of the two types had its own special shaft, capital, entablature, mouldings and ornaments constituting what is called an "order." The general type remained substantially unchanged from first to last, although there were constant variations in the proportions and minor details; the earliest examples known to us of either order show it complete in all its parts. The probable origin of these orders will be separately considered later on.

THE DORIC. The column of the Doric order (Figs. 26, 27) consists of a tapering shaft rising directly from the stylobate or platform and surmounted by a capital of great simplicity and beauty. The shaft is fluted with sixteen to twenty shallow chanelings of segmental or elliptical section, meeting in sharp edges or *arrises*. The capital is made up of a circular cushion of *echinus* adorned with fine grooves called *annulæ*, and a plain square *abacus* or cap. Upon this rests a plain architrave or *epistyle*, with a narrow fillet, the *tænia*, running along its upper edge. The frieze above it is divided into square panels, called the *metopes*, separated by vertical *triglyphs* having each two vertical grooves and chamfered edges. There is a triglyph over each column and one over each intercolumniation, or two in rare instances where the columns are widely spaced. The cornice consists of a broadly projecting *corona* resting on a *bed-mould* of one or two simple mouldings. Its under surface, called the *soffit*, is adorned with *mutules*, square, flat projections

having each eighteen *guttæ* (small round projections like drops or nail-heads) depending from its under side. Two or three small mouldings run along the upper edge of the corona, which has in addition, over each slope of the gable, a gutter-moulding or *cymatium*. The cornices along the horizontal edges of the roof have instead of the cymatium a row of *antefixæ*, ornaments of terra-cotta or marble, placed opposite the foot of each tile-ridge of the roofing. The enclosed triangular field of the gable, called the *tympanum*, was in the larger monuments adorned with sculptured groups resting on the shelf formed by the horizontal cornice below. Carved ornaments called *acroteria* commonly embellished the three angles of the gable or pediment.

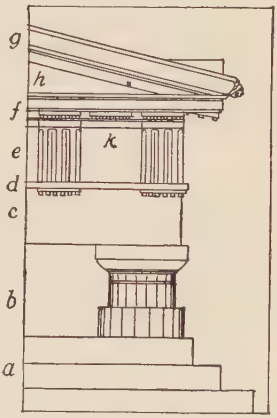

FIG. 26.—GREEK DORIC ORDER.

a, Crepidoma, or Stylobate; b, Column; c, Architrave; d, Tænia; e, Frieze; f, Horizontal cornice; g, Raking cornice; h, Tympanum of pediment; k, Metope.

POLYCHROMY. It has been fully proved, after a century of debate, that all this elaborate system of parts, severe and dignified in their simplicity of form, received a rich decoration of color. While the precise shades and tones employed cannot be predicated with certainty, it is well established that the triglyphs were painted blue and the metopes red, and that all the mouldings were decorated with leaf-ornaments, "eggs-and-darts," and frets, in red, green, blue, and gold. Whether walls and columns were also colored cannot be determined. In the clear Greek atmosphere and outlined against the brilliant sky, the Greek temple must have presented an aspect of rich, sparkling gayety.

ORIGIN OF THE ORDER. It is generally believed that the details of the Doric frieze and cornice were reminiscences of a primitive wood construction, of which, however, no remains exist. The triglyph suggests the grooved and chamfered ends of cross-beams; the mutules, the sheathing of the eaves; and the guttæ, the heads of the spikes or trenails by which the sheathing was secured. It is known that in early astylar temples the metopes were left open like the spaces between the ends of ceiling-rafters. In the earlier peripteral temples, as at Selinus, the triglyph-frieze is retained around the cella-wall under the ceiling of the colonnade, where it has no functional significance, as a survival from times antedating the adoption of the colonnade, when the tradition of a wooden roof-construction showing externally had not yet been forgotten.*

FIG. 27.—DORIC ORDER OF THE PARTHENON.

A similar wooden origin for the Doric column has been advocated by some, who point to the assertion of Pausanias that in the Doric Heræum at Olympia the original wooden columns had with one exception been replaced by stone columns as fast as they decayed. (See page 63.) This, however, only proves that wooden columns were sometimes used in early buildings, not that the Doric column was derived from

* Various other theories have been recently advanced to account for the triglyphs. Lack of space forbids discussion of these theories; I can only say that their ingenuity does not convince me of the erroneousness of the more commonly accepted theory which I have set forth.

them.† Dörpfeld, a high authority, would seek its origin in the Mycenæan column (see *ante*, p. 44). Others would derive it from the Egyptian columns of Beni Hassan (p. 11), which it certainly resembles. But it is not likely that the Greeks, in selecting models for imitation, would have passed over the splendors of Karnak and Luxor to copy these inconspicuous tombs perched high up on the cliffs of the Nile. It would seem that they invented this form independently, developing it in buildings which have perished; unless, indeed, they brought the idea with them from their primitive Aryan home in Asia.

THE IONIC ORDER was characterized by greater slenderness of proportion and elegance of detail than the Doric, and depended more on carving than on color for the decoration of its members (Fig. 28). It was adopted in the fifth century B.C. by the people of Attica, and used both for civic and religious buildings, sometimes alone and sometimes in conjunction with the Doric. The column was from eight to ten diameters in height, against four and one-third to seven for the Doric. It stood on a base which was usually composed of two tori (see p. 24 for definition) separated by a *scotia* (a concave moulding of semi-circular or semi-elliptical profile), and was sometimes provided also with a square flat base-block, the *plinth*. There was much variety in the proportions and details of these mouldings, which were often enriched by flutings or carved guilloches. The tall shaft bore twenty-four deep narrow flutings separated by narrow fillets. The capital was the most peculiar feature of the order. It consisted of a bead or *astragal* and echinus, over which was a horizontal band ending on either side in a scroll or volute, the sides of which presented the aspect shown in Fig. 29. A thin moulded abacus was interposed between this member and the architrave.

† The wooden column seen by Pausanias may have been a temporary support replacing an archaic stone column that had been removed to make way for a new column which had not yet been set up.

The Ionic capital was marked by two awkward features which all its richness could not conceal. One was the protrusion of the echinus beyond the face of the band above it, the other was the disparity between the side and front views of the capital, especially noticeable at the corners of a colonnade. To obviate this, various contrivances were tried, none wholly successful. Ordinarily the two adjacent exterior sides of the corner capital were treated alike, the scrolls at their meeting being bent out at an angle of 45°, while the two inner faces simply intersected, cutting each other in halves.

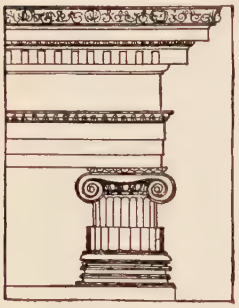

FIG. 28.—GREEK IONIC ORDER. (MILETUS.)

The entablature comprised an architrave of two or three flat bands crowned by fine mouldings; an uninterrupted frieze frequently sculptured in relief, but sometimes omitted entirely; and a simple cornice of great beauty. In addition to the ordinary bed-mouldings there was in many examples a row of narrow blocks or *dentils* under the corona, which was itself crowned by a high cymatium of extremely graceful profile, carved with the rich "honeysuckle" (*anthemion*) ornament. All the mouldings were carved with the "egg-and-dart," heart-leaf and anthemion ornaments, so designed as to recall by their outline the profile of the moulding itself. The details of this order were treated with much more freedom and variety than those of the Doric. The pediments of Ionic buildings were rarely adorned with groups of sculpture. The volutes and echinus of the capital, the fluting of the shaft, the use of a moulded circular base, and in the cornice the high corona and cymatium, these were constant elements in every Ionic order. but all other details varied widely in the different examples.

ORIGIN OF THE IONIC ORDER. The origin of the Ionic order has given rise to almost as much controversy as that of the Doric. Its different elements were apparently derived from various sources. The banded architrave is found in Mycenæ as well as in Lycian and Persian work, and is plainly derived from superposed wooden lintels.

Various archaic capitals found in Ionic Asia Minor and Greece display separately the component elements of the Ionic capital. The volutes, originally branching spirals springing from the shaft, later united by a horizontal band, may have originated in successive variations of Egyptian lotus-patterns.* But the combination of these diverse elements and their development into the final form of the order was the work of the Ionian Greeks, and it was in the Ionian provinces of Asia Minor that the most splendid examples of its use are to be found (Halicarnassus, Miletus, Priene, Ephesus), while the most graceful and perfect are those of Doric-Ionic Attica.

FIG. 29.—SIDE VIEW OF IONIC CAPITAL.

THE CORINTHIAN ORDER. This was a late outgrowth of the Ionic rather than a new order, and up to the time of the Roman conquest was only used for monuments of small size (see Fig. 38). Its entablature in pure Greek examples was identical with the Ionic; the shaft and base were only slightly changed in proportion and detail. The capital, however, was a new departure, consisting in the best examples of a high bell-shaped core surrounded by one or two rows of acanthus leaves, above which were pairs of branching scrolls meeting at the corners in spiral

* As contended by W. H. Goodyear in his *Grammar of the Lotus.*

volutes. These served to support the angles of a moulded abacus with concave sides (Fig. 30). One example, from the Tower of the Winds (the clepsydra of Andronicus Cyrrhestes) at Athens, has only smooth pointed palm-leaves and no scrolls above a single row of acanthus leaves. Indeed, the variety and disparity among the different examples prove that we have here only the first steps toward the evolution of an independent order, which it was reserved for the Romans to develop fully.

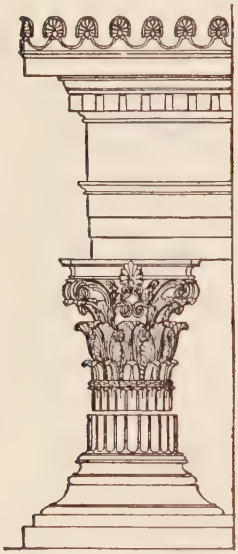

FIG. 30.—GREEK CORINTHIAN ORDER.
(From the monument of Lysicrates.)

GREEK TEMPLES: THE TYPE. With the orders as their chief decorative element the Greeks built up a splendid architecture of religious and secular monuments. Their noblest works were temples, which they designed with the utmost simplicity of general scheme, but carried out with a mastery of proportion and detail which has never been surpassed. Of moderate size in most cases, they were intended primarily to enshrine the simulacrum of the deity, and not, like Christian churches, to accommodate great throngs of worshippers. Nor were they, on the other hand, sanctuaries designed, like those of Egypt, to exclude all but a privileged few from secret rites performed only by the priests and king. The statue of the deity was enshrined in a chamber, the *naos* (see plan, Fig. 31), often of considerable size, and accessible to the public through a columnar porch, the *pronaos*. A smaller chamber, the

opisthodomus,* was sometimes added in the rear of the main sanctuary, to serve as a treasury or depository for votive offerings. Together these formed a windowless structure called the *cella*, beyond which was the rear porch, the *posticum* or *epinaos*. This whole structure was in the larger temples surrounded by a colonnade, the *peristyle*, which formed the most splendid feature of Greek architecture. The external aisle on either side of the cella was called the *pteroma*. A single gabled roof covered the entire building.

The Greek colonnade was thus an exterior feature, surrounding the solid cella-wall instead of being enclosed by it as in Egypt. The temple was a public, not a royal monument; and its builders aimed, not as in Egypt at size and overwhelming sombre majesty, but rather at sunny beauty and the highest perfection of proportion, execution, and detail (Fig. 34).

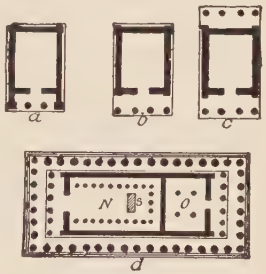

FIG. 31.—TYPES OF GREEK TEMPLE PLANS.

a, In Antis; b, Prostyle; c, Amphiprostyle; d, Peripteral (The Parthenon); N, Naos; O, Opisthodomus; S, Statue.*

There were of course many variations of the general type just described. Each of these has received a special name, which is given in the following list with explanations and is illustrated in Fig. 31.

In antis; with a porch having two or more columns enclosed between the projecting side-walls of the cella, as in the Themis Temple at Rhamnus.

Prostylar (or prostyle); with a columnar porch in front and no peristyle.

* There is much uncertainty in the use of this term. By many writers it is applied to the *posticum* or rear portico. In the Parthenon itself the chamber marked *o* was specially designated as the Parthenon, and the naos was called the Hecatompedon or hundred-foot hall.

Amphiprostylar (or -style); with columnar porches at both ends but no peristyle.*

Peripteral; surrounded by columns.†

Pseudoperipteral; with false or engaged columns built into the walls of the cella, leaving no pteroma.‡

Dipteral; with double lateral ranges of columns (see Fig. 39).

Pseudodipteral; with a single row of columns on each side, whose distance from the wall is equal to two intercolumniations of the front.‖

Tetrastyle, hexastyle, octastyle, decastyle, etc.; with four, six, eight, or ten columns in the end rows.

The Greeks also occasionally erected circular temples or shrines, though the majority of these belong to the Macedonian age. The most familiarly known of these are the Philippeion at Olympia, the Arsinoeion at Samothrace, and the Tholos at Epidaurus, all of the fourth century B. C.

CONSTRUCTION. Most of the temples known to us are stone, though it is evident from allusions in the ancient writers that wood was sometimes used in early times. (See p. 63.) The finest temples, especially those of Attica and Asia Minor, were of marble. In Magna Græcia, at Assos, Corinth, and other places where marble was wanting, coarse stone was employed and finished with a thin, fine stucco. The roof was almost invariably of wood and gabled, forming at the ends pediments decorated in most cases with sculpture. The disappearance of these inflammable and perishable roofs has given rise to endless speculations as to the lighting of the cellas, which in all known ruins, except one at Agrigentum and the Erechtheum at Athens, are destitute of windows. It has been conjectured that light was admitted through openings in the roof,

* Temple of Nike Apteros, Athens.

† All the larger temples, also the Mausoleum.

‡ Temple of Zeus at Agrigentum.

‖ Two of the temples at Selinus.

and even that the central part of the cella was wholly open to the sky. Such an arrangement is termed *hypæthral*, from an expression used in a description by Vitruvius;* but this description corresponds to no known structure, and the weight of opinion now inclines against the use of the hypæthral opening, except possibly in one or two of the largest temples, in which a part of the cella in front of the statue may have been thus left open. But even this partial *hypæthros* is not substantiated by direct evidence. In the model of the Parthenon designed by Ch. Chipiez for the Metropolitan Museum in New York, a small clerestory opening through the roof admits a moderate amount of light to the cella; but this ingenious device rests on no positive evidence (see Frontispiece). It seems on the whole most probable that the cella was lighted entirely by artificial illumination, or in part by direct light through the open door; but the controversy in its present state is and must be wholly speculative.

The wooden roof was covered with tiles of terra-cotta or marble. It was probably ceiled and panelled on the under side, and richly decorated with color and gold. The pteroma had under the exterior roof a ceiling of stone or marble, deeply panelled between transverse architraves, and painted in blue and gold.

The naos and rear chamber being in the larger temples too wide to be spanned by single beams, were furnished with interior columns to afford intermediate support. To avoid the extremes of too great massiveness and excessive slenderness in these columns, they were built in two stages, and advantage was taken of this arrangement, in some cases, at least, to introduce lateral galleries into the naos.

SCULPTURE AND CARVING. All the architectural membering was treated with the greatest refinement of design and execution, and the aid of sculpture, both in relief and in the

* Lib. III, Cap. I.

round, was invoked to give splendor and significance to the monument. The statue of the deity was the focus of internal interest, while externally, groups of statues representing the Olympian deities or the mythical exploits of gods, demigods, and heroes, adorned the gables. Reliefs in the friezes and metopes commemorated the favorite national myths. The noblest examples of this adaptation of pure sculpture (that is, sculpture as such, apart from its setting), are those of the Parthenon, consisting of figures in the full round from the pediments, groups in high relief from the metopes, and the beautiful frieze of the Panathenaic procession from the cella wall under the pteroma ceiling. The greater part of these splendid works are now in the British Museum, whither they were removed by Lord Elgin in 1801. From Olympia, Aegina, and Phigaleia, other master-works of the same kind have been transferred to the museums of Europe. In the Doric style there was little carving other than the sculpture, the ornament being mainly polychromatic. Greek Ionic and Corinthian monuments, however, as well as minor works such as steles, altars, etc., were richly adorned with carved mouldings and friezes, festoons, acroteria, and other

FIG. 32.—CARVED ANTHEMION ORNAMENT. ATHENS.

embellishments executed with the chisel. The anthemion ornament, a form related to the Egyptian lotus and Assyrian palmette, most frequently figures in these. It was made into designs of wonderful vigor and beauty (Fig. 32).

DETAIL AND EXECUTION. In the handling and cutting of stone the Greeks displayed a surpassing skill and delicacy. While ordinarily they were content to use stones of moderate size, they never hesitated at any dimension necessary for proper effect or solid construction. The lower drums of the Parthenon peristyle are 6 feet 6½ inches in diameter, and 2 feet 10 inches high, cut from single blocks of Pentelic marble. The architraves of the Propylæa at Athens are each made up of two or three lintels placed side by side, the longest 17 feet 7 inches long, 3 feet 10 inches high, and 2 feet 4 inches thick. In the colossal temples of Asia Minor, where the taste for the vast and grandiose was more pronounced, blocks of much greater size were used. These enormous stones were cut and fitted with the most scrupulous exactness. The walls of all important structures were built in regular courses throughout, every stone carefully bedded with extremely close joints. The masonry was usually laid up without cement and clamped with metal; there is little filling in with rubble and concrete between mere facings of cut stone, as in most modern work. When the only available stone was of coarse texture it was finished with a coating of fine stucco, in which sharp edges and minute detail could be worked.

The details were, in the best period, executed with the most extraordinary refinement and care. The profiles of capitals and mouldings, the carved ornament, the arrises of the flutings, were cut with marvellous precision and delicacy. It has been rightly said that the Greeks "built like Titans and finished like jewelers." But this perfect finish was never petty nor wasted on unworthy or vulgar design. The just relation of scale between the building and all its parts was admirably

maintained; the ornament was distributed with rare judgment, and the vigor of its design saved it from all appearance of triviality.

The sensitive taste of the Greeks led them into other refinements than those of mere mechanical perfection. In the Parthenon especially, but also in lesser degree in other temples, the seemingly straight lines of the building were all slightly curved, and the vertical faces inclined. This was done to correct the monotony and stiffness of absolutely straight lines and right angles, and certain optical illusions which their acute observation had detected. The long horizontal lines of the stylobate and cornice were made convex upward; a similar convexity in the horizontal corona of the pediment counteracted the seeming concavity otherwise resulting from its meeting with the multiplied inclined lines of the raking cornice. The columns were almost imperceptibly inclined toward the cella, and the corner intercolumniations made a trifle narrower than the rest; while the vertical lines of the arrises of the flutings were made convex outward with a curve of the utmost beauty and delicacy. By these and other like refinements there was imparted to the monument an elasticity and vigor of aspect, an elusive and surprising beauty impossible to describe and not to be explained by the mere composition and general proportions, yet manifest to every cultivated eye.*

* These refinements, first noticed by Allason in 1814, and later confirmed by Cockerell and Haller as to the columns, were published to the world in 1838 by Hoffer, verified by Penrose in 1846 further developed by Ziller, and recently discussed in exhaustive fashion by W. H. Goodyear.

CHAPTER VII

GREEK ARCHITECTURE—*Continued*

BOOKS RECOMMENDED: Same as for Chapter VI. Also, Bacon and Clarke, *Investigations at Assos.* Defrasse and Lechat, *Épidaure.* D'Ooge, *The Acropolis at Athens.* D'Espouy, *Fragments d'architecture antique; Monuments,* vol. I. Harrison and Verrall, *Mythology and Monuments of Ancient Athens.* Hulot and Fougères, *Sélinonte.* Middleton, *Plans and Drawings of Athenian Buildings.* Newton and Pullan, *A History of Discoveries at Halicarnassus, etc.* Koldewey and Puchstein, *Die griechischen Tempel in Unter-italian und Sicilien.* Waldstein, *The Argive Heræum.* Weller, *The Monuments of Athens.*

HISTORIC DEVELOPMENT. The history of Greek architecture, subsequent to the Heroic or Mycenæan Age, may be divided into periods as follows:

The ARCHAIC; from 650 to 500 B.C.

The TRANSITIONAL; from 500 to 460 B.C., or to the revival of prosperity after the Persian wars.

The PERICLEAN; from 460 to 400 B.C.

The FLORID or ALEXANDRIAN; from 400 to 300 B.C.

The DECADENT; 300 to 100 B.C.

The ROMAN; 100 B.C. to 200 A.D.

These dates are, of course, arbitrary; the development of styles is a continuous and gradual process; but divisions like the above are convenient aids in following this development through its various phases.

ARCHAIC PERIOD. The archaic period is characterized by the common use of the Doric order, which appears in the

earliest monuments complete in all its parts, but heavy in its proportions and coarse in its execution. The oldest known temples of this period are the **Heræum** at Olympia, the Temple of Apollo on Ortygia at Syracuse, and two temples known as "C" and "D" on the acropolis at **Selinus** in Sicily (cir. 610–590 B.C.). These two are both of a coarse limestone covered with stucco. The columns are low and massive (4 to 5 diameters in height), widely spaced, and carry a very high entablature. The **Apollo Temple** at Corinth, formerly deemed the oldest Greek temple extant with its original columns (those of the Heræum having been all replaced at later dates), is by some authorities considered to belong to the Transition, in spite of certain archaic details. Other temples at Selinus date from the middle or latter part of the sixth century; they have higher columns and finer profiles than those just mentioned. All the earlier temples have long and narrow cellas, and in most of them the pteroma is wider than one intercolumniation; **Temple T** at **Selinus** is pseudodipteral. This temple, dedicated to Apollo, was the earliest of five colossal Greek temples of very nearly identical dimensions; it measured 360 feet by 167 feet in plan, but was never completed. During the second half of the sixth century important Doric temples were built at Pæstum in South Italy, the so-called "Basilica" being the oldest, and Agrigentum in Sicily; the somewhat primitive temple at Assos in Asia Minor, with uncouth carvings of centaurs and monsters on its architrave, belongs to this same period. The **Temple of Zeus** at **Agrigentum** (Fig. 33) is another singular and exceptional design, and was the second of the five colossal temples mentioned above; it dates from

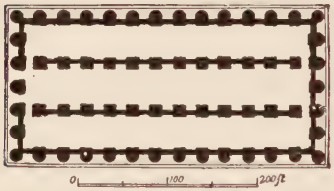

FIG. 33.—TEMPLE OF ZEUS. AGRIGENTUM.

about 479 B.C. The temple was entirely enclosed by walls with engaged columns showing externally, and the roof was supported internally by two rows of massive piers. Colossal atlantes or applied statues figured in the design, but in what manner is not known. The temple was never completed.

THE TRANSITION. During the transitional period there was a marked improvement in the proportions, detail, and workmanship of the temples. The cella was made broader, the columns more slender, the entablature lighter. The triglyphs disappeared from the cella wall, and sculpture of a higher order enhanced the architectural effect. The profiles of the mouldings and especially of the capitals became more subtle and refined in their curves, while the development of the Ionic order in important monuments in Asia Minor was preparing the way for the splendors of the Periclean age. Three temples especially deserve notice: the **Aphæa* Temple** on the island of **Ægina,** that of **Hera Lakinia** at **Agrigentum** in Sicily, and the **Temple of Zeus** at **Olympia.** They belong to the period 479–450 B.C., they are all hexastyle and peripteral, and without triglyphs on the cella wall. Of the three the last named is interesting as the scene of those rites which preceded and accompanied the Panhellenic Olympian games, and as the central feature of the Altis, the most complete temple-group and enclosure among all Greek remains. It was built of a coarse conglomerate, finished with fine stucco, and embellished with sculpture by the greatest masters of the time. The adjacent **Heræum** (temple of Hera) was a highly venerated and ancient shrine, originally built about 1000 B.C. According to Pausanias, the original columns were of wood and were replaced as they decayed by stone columns; one of the wooden posts being still visible in his time. The singular variety of capitals among its ruins, corresponding to the various periods

* Formerly identified with the Temple of Zeus described by Pausanias; claimed also until recently as a Temple of Athena.

at which they were added, and the varying diameters of the drums of the extant columns, prove that they replaced an earlier construction; and it may be that the earlier shafts were of wood.

THE PERICLEAN AGE. The conclusion of the Persian wars may be taken as the dividing line between the Transition

FIG. 34.—RUINS OF THE PARTHENON

period and the Periclean age. The *élan* of national enthusiasm that followed the expulsion of the invader, and the glory and wealth which accrued to Athens as the champion of all Hellas, resulted in a splendid reconstruction of the Attic monuments as well as a revival of building activity in Asia Minor. By the wise administration of Pericles and by the genius of Ictinus, Phidias, and other artists of surpassing skill, the Acropolis at Athens was crowned with a group of buildings and statues absolutely unrivalled. Chief among them was the **Parthenon,**

the shrine of Athena Parthenos, which the critics of all schools have agreed in considering the most faultless in design and execution of all buildings erected by man (Figs. 31, 34 and Frontispiece). It was an octastyle peripteral temple, with seventeen columns on the side, and measured 228 by 101 feet on the top of the stylobate. It was the work of Ictinus and Callicrates, built to enshrine the noble statue of the goddess by Phidias, a standing chryselephantine figure forty feet high. It was the masterpiece of Greek architecture not only by reason of its refinements of detail, but also on account of the beauty of its sculptural adornments. The frieze about the cella wall under the pteroma ceiling, representing in low relief with masterly skill the Panathenaic procession; the sculptured groups in the metopes, and the superb assemblages of Olympic and symbolic figures of colossal size in the pediments, added their majesty to the perfection of the architecture. Here also the horizontal curvatures and other refinements are found in their highest development. Northward from it, upon the Acropolis, stood the **Erechtheum,** an excellent example of the Attic-Ionic style (Figs. 35, 36). Its singular irregularities of plan and level, and the variety of its detail, exhibit in a striking way the Greek indifference to mere formal symmetry when confronted by practical considerations.* The motive in this case was the desire to include in one design several existing and venerated shrines to Attic deities and heroes—Athena Polias, Poseidon,

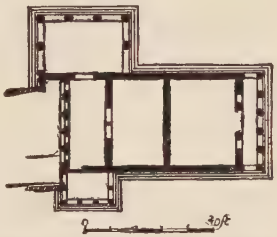

FIG. 35.—PLAN OF ERECHTHEUM.

* Unless, indeed, we have here only a portion completed of a design originally intended to be symmetrical, with the north porch as its central feature. There are several considerations in favor of this view, advanced by Dörpfeld and others, but no positive evidence.

Pandrosus, Erechtheus, Boutes, etc. Begun by unknown architects in 435 B.C., and not completed until 408 B.C., it remains in its ruin still one of the most interesting and attractive of ancient buildings. Its two colonnades of differing design, its beautiful north doorway, and the unique and noble caryatid porch or balcony on the south side are unsurpassed in delicate beauty combined with vigor of design.* A smaller monument of the Ionic order, the amphiprostyle temple to **Nike Apteros**—the Wingless Victory—stands on a projecting spur of the Acropolis to the southwest, where it was reconstructed by the Germans in 1835 from fragments on the site. It measures only 27 feet by 18 feet in plan; the cella is nearly square; the columns are sturdier than those of the Erechtheum, and the execution of the monument is admirable.

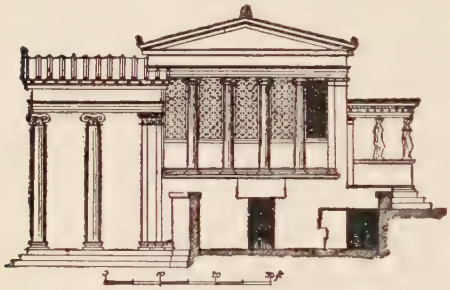

FIG. 36.—WEST END OF ERECHTHEUM, RESTORED

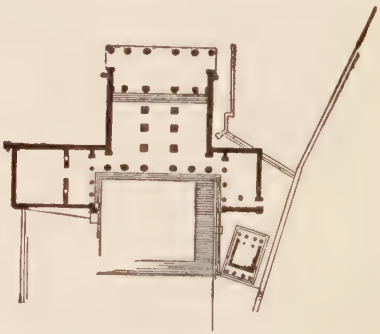

FIG. 37.—PROPYLÆA AT ATHENS. PLAN.

* Mr. G. P. Stevens, of the Archæological Institute of America, has demonstrated the existence in the east wall of the original structure of two windows, as shown in Figure 35, which, as well as Figure 37, was copied, with his permission, from his drawings (see Journal Archæol. Inst. of America, X, I *et seq.*).

It was the first completed of the extant group of the Acropolis (450–440 B.C.).

In the **Propylæa** (Fig. 37), the monumental gateway to the Acropolis, the Doric and Ionic orders appear to have been combined for the first time (437 to 432 B.C.). It was the master work of Mnesicles. The front and rear façades were Doric hexastyles; adjoining the front porch were two unsymmetrical lateral wings employing a smaller Doric order. The central passageway led between two rows of Ionic columns to the rear porch, entered by five doorways and crowned, like the front, with a pediment. The whole was executed with the same splendor and perfection as the other buildings of the Acropolis, and was a worthy gateway to the group of noble monuments which crowned that citadel of the Attic capital. The two orders were also combined in the temple of **Apollo Epicurius** at **Phigalæa** (Bassæ). This temple was erected in 430 B.C. by Ictinus, who used the Ionic order internally to decorate a row of projecting piers instead of free-standing columns in the naos, with a single column in the middle between the westernmost piers. An early Corinthian capital found in the ruins may have belonged to this column.

The last of the Athenian temples of this period to be completed was the so-called **Theseum**—really a temple of Hephaistos (Vulcan) south of the Acropolis. This is the best preserved of all Greek temples, and is of Pentelic marble, constructed with all the refinements of the Periclean age, but with far less of sculptural adornment than the Parthenon. It was completed about 421 B.C.

ALEXANDRIAN AGE. A period of reaction followed the splendid architectural activity of the Periclean age. A succession of disastrous wars—the Sicilian, Peloponnesian, and Corinthian—drained the energies and destroyed the peace of European Greece for seventy-five years, robbing Athens of her supremacy and inflicting wounds from which she never re-

covered. In the latter part of the fourth century, however the triumph of the Macedonian empire over all the Mediterranean lands inaugurated a new era of architectural magnificence, especially in Asia Minor. The keynote of the art of this time was splendor, as that of the preceding age was artistic perfection. The Corinthian capital began to appear in the smaller secular buildings. In the decastyle temple of **Apollo Didymæus** at Miletus, the plinths of the bases were ornamented and paneled with rich scroll-carvings; and the piers which buttressed the interior faces of the cella walls were given capitals of singular but elegant form, midway between the Ionic and Corinthian types. This temple belongs to the list of colossal edifices already referred to; its dimensions were 366 by 163 feet, making it the largest of them all. The famous **Artemisium** (temple of Artemis or Diana) at Ephesus measured 342 by 163 feet. Several of the columns of the latter were enriched with sculptured figures encircling the lower drums of the colossal shafts. At Epidaurus, the health resort sacred to Asklepios, the circular well-house was constructed with an interior circle of Corinthian columns. The most lavish expenditure was bestowed upon small structures, shrines, and sarcophagi. The graceful monument still visible in Athens, erected by the chorægus Lysicrates in token of his victory in the choral competitions, belongs to this period (330 B.C.). It is circular, with a slightly domical imbricated roof, and is

FIG. 38.—CHORAGIC MONUMENT OF LYSICRATES.

(Restored Model, Metropolitan Museum, N. Y.)

decorated with elegant engaged Corinthian columns (Fig. 38)' In the Imperial Museum at Constantinople are several sarcophagi of this period, found at Sidon, but executed by Greek artists, and of exceptional beauty. They are in the form of temples or shrines; the finest of them, supposed by some to have been made for the Persian satrap who figures prominently on its sculptured reliefs, is the most sumptuous work of the kind in existence. The exquisite polychromy of its beautiful reliefs and the perfection of its rich details of cornice, pediment, tiling, and crestings, make it an exceedingly interesting and instructive example of the minor architecture of the period.

THE DECADENCE. After the decline of Alexandrian magnificence Greek art never recovered its ancient glory, but the flame was not suddenly extinguished. While in Greece proper the works of the second and third centuries B.C., are for the most part weak and lifeless, like the **Stoa of Attalus** (175 B.C.) and the **Tower of the Winds** (the Clepsydra of Andronicus Cyrrhestes, 100 B.C.) at Athens, the Portico of Philip in Delos, and the circular Philippeion at Olympia, there were still a few worthy works built in Asia Minor. The splendid **Altar** erected at **Pergamon** by Eumenes II (cir. 180 B.C.) in the Ionic order, combined sculpture of extraordinary vigor with imposing architecture in masterly fashion. At **Aizanoi** an Ionic Temple to **Zeus,** by some attributed to the Roman period, but showing rather the character of good late Greek work, deserves mention for its elegant details, and especially for its frieze-decoration of acanthus leaves and scrolls resembling those of a Corinthian capital.

ROMAN PERIOD. During this period, *i.e.*, throughout the second and first centuries B.C., the Roman dominion was spreading over Greek territory, and the structures erected subsequent to the conquest partake of the Roman character and mingle Roman conceptions with Greek details and *vice*

versâ. The temple of the **Olympian Zeus** at Athens (Fig. 39), a mighty dipteral Corinthian edifice measuring 354 by 135 feet, standing on a vast terrace or temenos surrounded by a buttressed wall, was begun by Antiochus Epiphanes (170 B.C.) on the site of an earlier unfinished Doric temple of the time of Pisistratus, and carried out under the direction of the Roman architect, Cossutius. It was not, however, finally completed until the time of Hadrian, 130 A.D. The columns were 57 feet high, with capitals of the most perfect Corinthian type; fifteen are now standing, and one lies prostrate near by. To the Roman period also belong the **Agora Gate** (cir. 12 B.C.), the **Arch of Hadrian** (117 A.D.), the **Odeon of Regilla** or of Herodes Atticus (143 A.D.), at Athens, the Propylæa at Eleusis, and many temples and tombs, theatres, arches, etc., in the Greek provinces.

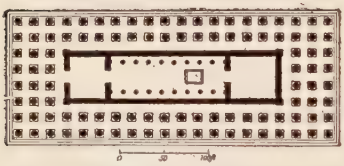

FIG. 39.—TEMPLE OF OLYMPIAN ZEUS, ATHENS.

SECULAR MONUMENTS; PROPYLÆA. The stately gateway by which the Acropolis was entered has already been described. It was the noblest and most perfect of a class of buildings whose prototype is found in the monumental columnar porches of the palace-group at Persepolis. The Greeks never used the arch in these structures, nor did they attach to them the same importance as did most of the other nations of antiquity. The Altis of Olympia, the national shrine of Hellenism, appears to have had no central gateway of imposing size, but a number of insignificant entrances disposed at random. The **Propylæa** of **Sunium, Priene** and **Eleusis** are the most conspicuous, after those of the Athenian Acropolis. Of these the Ionic gateway at Priene is the finest, although the inner one of the two at Eleusis is interesting for its anta-

capitals. These are of Corinthian type, adorned with winged horses, scrolls, and anthemions of an exuberant richness of design, characteristic of this late period.

The specifications have been preserved to us of an arsenal of the Periclean age at the Piræus, but no vestige of the structure itself remains, nor has any other building of like character been preserved.

COLONNADES, STOÆ. These were built to connect public monuments (as the Dionysiac theatre and Odeon at Athens); or along the sides of great public squares, as at Assos and Olympia, (the so-called **Echo Hall**); or as independent open public halls, as the **Stoa Diple** at Thorikos. They were rarely of great size, and most of them are of rather late date.

THEATRES, ODEONS. These were invariably cut out of the rocky hillsides, though in a few cases (Mantinæa, Myra, Antiphellos) a part of the seats were sustained by a built-up sub-structure and walls to eke out the deficiency of the hill-slope under them. The front of the excavation was enclosed by a stage and a set scene or background, leaving somewhat over a semicircle for the *orchestra* enclosed by the lower tier of seats (Fig. 40). An altar to Dionysus (Bacchus) was the essential feature in the foreground of the orchestra, where the Dionysiac choral dance was performed. The seats formed successive steps of stone or marble sweeping around the sloping excavation, with carved marble thrones for the priests, archons, and other dignitaries. The only architectural decoration of the theatre was that of the set scene or *skene*, which with its wing-walls (*paraskenai*) enclosing the stage (*logeion*) was a permanent structure of stone or marble adorned with doors, cornices, pilasters, etc.* This has perished in nearly every case;

* There has been much controversy over Dörpfeld's contention that the stage of the true Greek theatre was on a level with the orchestra and that the raised *logeion* is in every case a late addition; but the consensus of opinion seems to be against this view.

but at Aspendus, in Asia Minor, there is one still fairly well preserved, with a rich architectural decoration on its inner face. The extreme diameter of the theatres varied greatly; thus at Aizanoi it is 187 feet and at Syracuse 495 feet. One of the best preserved of Greek theatres is that at Epidaurus, the only one not altered fundamentally by the Romans. The theatre of Dionysus at Athens (finished 325 B.C.) could accommodate 17,000 spectators.

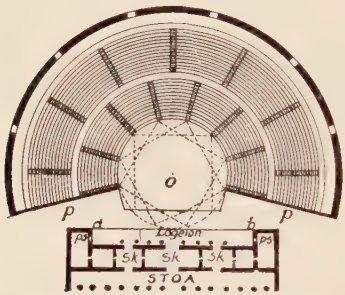

FIG. 40.—PLAN OF GREEK THEATRE.
o, Orchestra; ab, Logeion p, p, Parodoi ps, ps, Paraskenai; sk, Skene.

The odeon differed from the theatre principally in being smaller and entirely covered in by a wooden roof. The **Odeon of Regilla,** built by Herodes Atticus in Athens (143 A.D.), is a well-preserved specimen of this class, but all traces of its cedar ceiling and of its intermediate supports have disappeared.

BUILDINGS FOR ATHLETIC CONTESTS. These comprised stadia and hippodromes for races, and gymnasia and palæstræ for individual exercise, bathing, and amusement. The *stadia* and *hippodromes* were oblong enclosures surrounded by tiers of seats and without conspicuous architectural features. The *palæstra* or *gymnasium*—for the terms are not clearly distinguished—was a combination of courts, chambers, pools for bathers and *exedræ* or semicircular tiers of seats for spectators; it served not merely for the exercises of athletes, but also for public recitations and entertainments. It was the prototype of the Roman thermæ, but simpler in plan and adornment. Every Greek city had one or more of them, but they have almost wholly disappeared, except scanty remains at Olympia, Alexandria Troas and Ephesus.

PLACES OF ASSEMBLY. Public assemblies were generally held in the open air, but certain religious fraternities met in halls like that of the **Mysteries** at Eleusis and the **Thersilion** at Megalopolis. These were square hypostyle halls with staged seats in tiers on three or all four sides. In some cities the council met in a hall called the **bouleuterion.** Every city had its **agora** or market square, which, in the Alexandrian age and after, was often of considerable magnificence with colonnades and public buildings, as in Magnesia in Asia Minor.

TOMBS. These are not numerous, and the most important are found in Asia Minor. The greatest of these is the famed

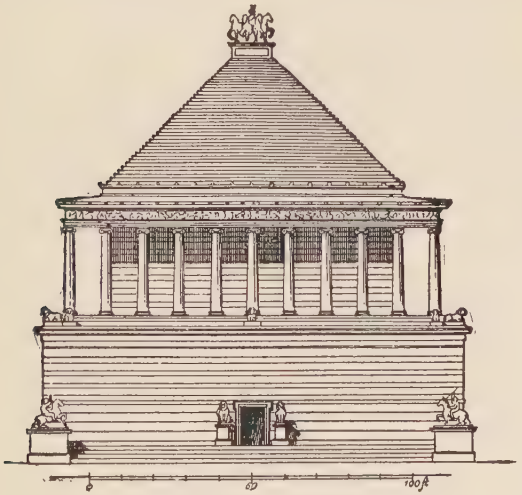

FIG. 41.—MAUSOLEUM AT HALICARNASSUS.
(As restored by the author.)

Mausoleum at Halicarnassus in Caria, the monument erected to the king Mausolus by his widow Artemisia (354 B.C.; Fig. 41). It was designed by Satyrus and Pythius in the Ionic style, and comprised a podium or base 50 feet high and measur-

ing 80 feet by 100 feet, in which was the sepulchre. Upon this base stood a cella surrounded by thirty-six Ionic columns, and crowned by a pyramidal roof, on the peak of which was a colossal marble quadriga at a height of 130 feet. It was superbly decorated by Scopas and other great sculptors with statues, marble lions, and a magnificent frieze. The British Museum possesses fragments of this most imposing monument. At Xanthus the **Nereid Monument,** so called from its sculptured figures of Nereides, was a somewhat similar design on a smaller scale, with sixteen Ionic columns. At Mylassa was another tomb with an open Corinthian colonnade supporting a roof formed in a stepped pyramid. Some of the later rock-cut tombs of Lycia at Myra and Antiphellus may also be counted as Hellenic works.

DOMESTIC ARCHITECTURE. Few remains of Greek houses have been found sufficiently well preserved to permit of restoring even the plan. Mr. Blegen of the American school at Athens has unearthed near Corinth many remains of small primitive houses of the Mycenæan age; and the excavations at Selinus have revealed the foundations of many small houses of the archaic and transitional periods, but these are of slight architectural importance. At Priene, Delos and some other sites the house foundations show a court with rooms on three or on all sides. In the later examples this court was surrounded by a peristyle. Such houses are prototypes of the Pompeiian house (see p. 109).

MONUMENTS. In addition to those already mentioned in the text the following should be enumerated:

AEGEAN PERIOD. Palaces and tombs of Minoan culture at Knossos, Gournia, Hagia Triada, etc. In the islands about Santorin, remains of houses antedating 1500 B.C.; at Tiryns the Acropolis, walls, and miscellaneous ruins; the like also at Mycenæ, besides various tombs; walls, gates, and houses of six successively superposed cities at Hissarlik (Troy, Ilios.); walls and gates at Samos, Thorikos, Menidi, Athens, etc.

Archaic Period. Bouleuterion at Olympia; Temple of Artemis at Sparta; probably 9th century B.C. Primitive temple at Thermon in Aetolia, oval plan like primitive houses in Orchomenos, 9th or 10th century B.C. Doric temples at Metapontium, Selinus, Agrigentum, Paestum; at Athens the first Parthenon; in Asia Minor the primitive Ionic Artemisium at Ephesus and the Heræum at Samos.

Transitional Period. At Agrigentum, temples of Concord, Castor and Pollux, Demeter, Asklepios, all circ. 480 B.C.; temples at Selinus; unfinished temple at Segesta; at Delphi, temple of Apollo, various shrines, etc.

Periclean Period. In Athens the Ionic temple on the Illissus, destroyed during the last century; on Cape Sunium the temple of Athena, 430 B.C., partly standing; at Rhamnus, the temples of Themis and of Nemesis; at Argos, the Heræum and another temple, stoa, and other buildings; all these were Doric.

Alexandrian Period. Doric temples of Zeus at Nemea and of Athena Alea at Tegea, early fourth century B.C.; of Asklepios at Epidaurus, also portico and temple of Artemis, 380 B.C.; Ionic temple of Athena Polias at Priene by Pithios, 340 B.C.

Decadence and Roman Period. Ionic temples of Dionysos at Teos and of Leucophryne at Magnesia, both about 200 B.C.; at Athens, stoa of Eumenes, cir. 170 B.C.; monument of Philopappus on Museum Hill, 110 A.D.; gymnasium of Hadrian, 114-137 A.D.; these two of the Corinthian order; at Aphrodisias (Asia Minor), stadium, temple of Aphrodite (built into a church).

Theatres. Besides those mentioned there are important remains of theatres at Argos, Delos, Sikyon and Thorikos in Greece, Segesta in Sicily, Iassus and Patara in Asia Minor, besides many of less importance on other Hellenic sites.

CHAPTER VIII

ROMAN ARCHITECTURE

BOOKS RECOMMENDED: As before, Anderson and Spiers. Benoît, *L'Architecture; Antiquité.* Bühlmann (see General Bibliography). Choisy, *L'Art de bâtir chez les Romains.* D'Espouy, *Fragments d'architecture antique.* Durm, *Die Baukunst der Etrusker; Die Baukunst der Römer* (in *Hdbuch. d. Arch*). Guzman, *L'Art décoratif de Rome.* Lanciani, *Ancient Rome in the Light of Modern Discovery; New Tales of Old Rome; Ruins and Excavations of Ancient Rome.* Middleton, *The Remains of Ancient Rome.* Platner, *Topography and Monuments of Rome.* Rodocanachi, *Les Monuments antiques de Rome encore existants.* Taylor and Cresy, *The Architectural Antiquities of Rome.* Vitruvius, *Ten Books on Architecture* (tr. M. H. Morgan).

LAND AND PEOPLE. The geographical position of Italy conferred upon her special and obvious advantages for taking up and carrying northward and westward the arts of civilization. A scarcity of good harbors was the only drawback amid the blessings of a glorious climate, fertile soil, varied scenery, and rich material resources. From a remote antiquity Dorian colonists had occupied the southern portion and the island of Sicily, enriching them with splendid monuments of Doric art; and Phœnician commerce had brought thither the products of Oriental art and industry. The founding of Rome (assigned by popular tradition to the date 753 B.C.) established the nucleus about which the sundry populations of Italy were to crystallize into the Roman nation, under the dominating influence of the Latin element. Later on, the absorption of the Etruscans added to this composite people a race of builders

and engineers, as yet rude and uncouth in their art, but destined to become a powerful factor in developing the new architecture that was to spring from the contact of the practical Romans with the noble art of the Greek centers.

GENERAL CHARACTERISTICS. While the Greeks bequeathed to posterity the most perfect models of form in literary and plastic art, it was reserved for the Romans to work out the applications of these to every-day material life. The Romans were above all things a practical people and consummate organizers, as shown in the marvellous administrative institutions of their government. At first deficient in culture, they were yet able to recast the forms of Greek architecture in new moulds, and to evolve therefrom a mighty architecture adapted to wholly novel conditions. They brought engineering into the service of architecture, which they fitted to the varied requirements of government, public amusement, private luxury, and the common comfort. They covered the antique world with arches and amphitheatres, with villas, baths, basilicas, and temples, all bearing the unmistakable impress of Rome, though wrought by artists and artisans of divers races. Only an extraordinary genius for organization could have accomplished such results.

The architects of Rome marvellously extended the range of their art, and gave it a flexibility by which it accommodated itself to the widest variety of materials and conditions. They made the arch and vault the basis of their system of design, employing them on a scale previously undreamed of, and in combinations of surpassing richness and majesty. They systematized their methods of construction so that soldiers and barbarians could execute the rough mass of their buildings, and formulated the designing of the decorative details so that artisans of moderate skill could execute them with good effect. They carried the principle of repetition of motives to its utmost limit, and sought to counteract any resulting monotony by

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the scale and splendor of the design. Above all they developed planning into a fine art, displaying their genius in a wonderful variety of combinations and in an unfailing sense of the demands of constructive propriety, practical convenience, and artistic effect. Where Egyptian or Greek architecture shows one type of plan, the Roman shows a score.

GREEK INFLUENCE. Previous to the closing years of the Republic the Romans had no art but the Etruscan. The few buildings of importance they possessed were of Etruscan design and workmanship, excepting a small number built by Greek hands. It was not until the Empire that Roman architecture took on a truly national form. True Roman architecture is essentially imperial. The change from the primitive Etruscan style to the splendors of the imperial age was due to the conquest of the Greek states. Not only did the Greek campaigns* enrich Rome with an unprecendented wealth of artistic spoils; they also brought into Italy hosts of Greek artists, and filled the minds of the campaigners with the ambition to realize in their own dominions the marble colonnades, the temples, theatres, and propylæa of the Greek cities they had pillaged. The Greek orders were adopted, altered, and applied to arcaded design as well as to peristyles and other open colonnades. The marriage of the column and arch gave birth to a system of forms as characteristic of Roman architecture as the Doric or Ionic colonnade is of the Greek.

THE ROMAN ORDERS. To meet the demands of Roman taste the Etruscan column was retained with its simple entablature; the Doric and Ionic were adopted in a modified form; the Corinthian was developed into a complete and independent order, and the Composite was added to the list. An approximation to a standard system of proportions for all these five orders was gradually evolved, and the mouldings were profiled with arcs of circles instead of the subtler Greek

*See page 91

curves. It must not be supposed, however, that all this was due to arbitrary rules imposed by authority. It was a gradual convergence of practice due to growing experience, and the uniformity was much less than is sometimes imagined. In the building of many-storied structures the orders were superposed, the more slender over the sturdier, in an orderly and graded succession. The immense extent and number of the Roman buildings, the coarse materials often used, the relative scarcity of highly trained artisans, and above all, the necessity of making a given amount of artistic design serve for the largest possible amount of architecture, combined to direct the designing of detail into uniform channels. Thus in time was established a sort of canon of proportions, which was reduced to rules by Vitruvius, and revived in much more detailed and precise form by Vignola in the sixteenth century.

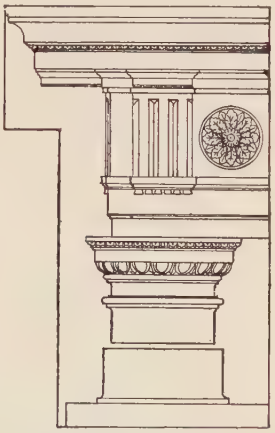


FIG. 42.—ROMAN DORIC ORDER TEMPLE AT ALBANO*

In each of the orders, including the Doric, the column was given a base one-half of a diameter in height (the unit of measurement being the diameter of the lower part of the shaft, the *crassitudo* of Vitruvius). The shaft was made to contract about one-sixth in diameter toward the capital, under which it was terminated by an *astragal* or collar of small mouldings; at the base it ended in a slight flare and fillet called the the *cincture*. The entablature was in all cases given not far from one quarter the height of the whole column. The **Tuscan** order was a rudimentary or Etruscan Doric with a column

*Middle portion of shaft omitted (as in Figs. 26, 43).

seven diameters high and a simple entablature without triglyphs, mutules, or dentils. But few examples of its use are known. The **Doric** (Fig. 42) retained the triglyphs and metopes, the mutules and guttæ of the Greek; but the column was made eight diameters high, the shaft was smooth or had deep flutings separated by narrow fillets, and was usually provided with a simple moulded base on a square plinth. Mutules were used only over the triglyphs, and were even replaced in some cases by dentils; the corona was made lighter than the Greek, and a cymatium replaced the antefixæ on the lateral cornices. The **Ionic** (Fig. 43) underwent fewer changes, and these principally in the smaller mouldings and details of the capital. The column was approximately nine diameters high. The **Corinthian** order, the column of which was given a height of ten diameters, was made into an independent order by the designing of a special base of small *tori* and *scotiæ*, and by sumptuously carved *modillions* or brackets enriching the cornice and supporting the corona above a denticulated bedmould (Fig. 44). Though the first designers of the modillion were probably Greeks, it must, nevertheless, be taken as really a Roman device, worthily completing the essentially Roman Corinthian order. The **Composite** was formed by combining into one capital portions of the Ionic and Corinthian, and giving to it a simplified form of the Corinthian cornice. The Corinthian order remained, however, the favorite order of Roman architecture.

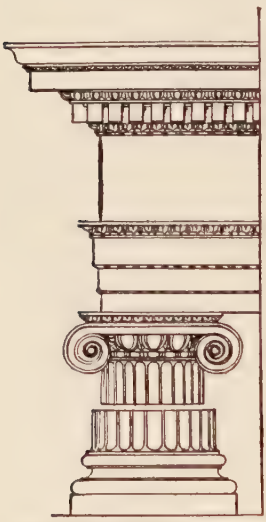


FIG. 43.—ROMAN IONIC ORDER.

USE OF THE ORDERS. The Romans introduced many innovations in the general use and treatment of the orders. Monolithic shafts were preferred to those built up of superposed drums. The fluting was omitted on these, and when hard and semi-precious stone like porphyry or verd - antique was the material, it was highly polished to bring out its color. These polished monoliths were often of great size, and they were used in almost incredible numbers.

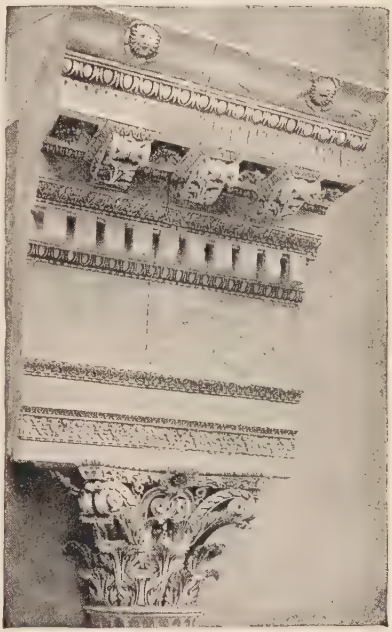


FIG. 44.—CORINTHIAN ORDER (TEMPLE OF CASTOR AND POLLUX).

Another radical departure from Greek usage was the mounting of columns on pedestals to secure greater height without increasing the size of the column and its entablature. The Greek *anta* was developed into the Roman pilaster or flattened wall-column, and every free column, or range of columns perpendicular to the façade, had its corresponding pilaster to support the wall-end of the architrave. But the most radical innovation was the general use of engaged columns as wall-decorations or buttresses. The engaged column projected from the wall by more than half its diameter, and was built up with the wall as a part of its substance (Fig. 45). The entablature was in many cases advanced only over

the columns, between which it was set back almost to the plane of the wall. This practice is open to the obvious criticism that it makes the column appear superfluous by depriving it of its function of supporting the continuous entablature. The objection has less weight when the projecting entablature over the column serves as a pedestal for a statue or similar object, which restores the column its function as a support (see the Arch of Constantine, (Fig. 63).

FIG. 45.—ROMAN ARCADE WITH ENGAGED COLUMNS.
(From the Colosseum.)

ARCADES. The orders, though probably at first used only as free supports in porticoes and colonnades, were early applied as decorations to arcaded structures. This practice became general with the multiplication of many-storied arcades like those of the amphitheatres, the engaged columns being set between the arches as buttresses, supporting entablatures which marked the divisions into stories (Fig. 45). This combination has been assailed as a false and illogical device, but the criticism proceeds from a too narrow conception of architectural propriety. It is defensible upon both artistic and logical grounds; for it not only furnishes a most desirable play of light and shade and a pleasing contrast of rectangular and curved lines, but by emphasizing the constructive divisions and elements of the building and the vertical support of the piers, it also contributes to the expressiveness and vigor of the design.

VAULTING. The Romans substituted vaulting in brick, concrete, or masonry for wooden ceilings wherever possible, both in public and private edifices. The Etruscans were the first vault-builders in Europe, and the Cloaca Maxima, the great sewer of Republican Rome (about 500 B.C.) still remains as a monument of their engineering skill. Probably not only Etruscan engineers (whose traditions were perhaps derived from Asiatic sources in the remote past), but Asiatic builders also from conquered eastern provinces, were engaged together in the development of the wonderful system of vaulted construction to which Roman architecture so largely owed its grandeur. Three types of vault were commonly used: the barrel-vault, the groined or four-part vault, and the dome.

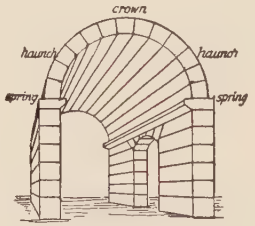


FIG. 46.—BARREL VAULT.

The barrel-vault (Fig. 46) was generally semi-cylindrical in section, and was used to cover corridors and oblong halls, like the temple-cellas, or was bent around a curve, as in amphitheatre passages.

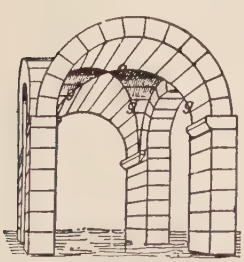


FIG. 47.—GROINED VAULT.
g, g, Groins.

The groined vault is formed by the intersection of two barrel-vaults (Fig. 47). When several compartments of groined vaulting are placed together over an oblong plan, a double advantage is secured. Lateral openings can be carried up to the full height of the vaulting instead of being stopped below its springing; and the weight and thrust of the vaulting are concentrated upon a number of isolated points instead of being exerted along the whole extent of the side walls, as with the barrel-vault. The Romans saw that it was sufficient to dispose of the masonry

at these points in masses at right angles to the length of the hall, to resist better the lateral thrust of the vault. This appears clearly in the plan of the Basilica of Constantine (Fig. 58).

The dome was in almost all Roman examples supported on a circular wall built up from the ground, as in the Pantheon (Fig. 54). True spherical pendentives to support a dome over four or eight arches are not found in Roman buildings.

In these vaults, as in the wall-masonry, the Romans' common sense devised methods extremely simple for accomplishing vast designs. While the smaller vaults were, so to speak, cast in concrete upon moulds made of rough boards, the larger vaults appear to have been often built with the aid of a skeleton of light ribs of brick, which served as supports for intermediate centrings on which to cast the concrete fillings between them. The whole vault, once hardened, formed really a monolithic curved lintel, exerting no thrust whatever, so that the extraordinary precautions against lateral disruption practised by the Romans were, in fact, in many cases quite superfluous.

The Romans made of the vault something more than a mere constructive device. It became in their hands an element of interior effect at least equally important with the arch and column. No style of architecture has ever evolved nobler forms of ceiling than the groined vault and the dome. Moreover, the use of vaulting, besides providing an absolutely fireproof form of roof, also made possible effects of unencumbered spaciousness and amplitude which could never be compassed by any combination of piers and columns. While Greece gave to architecture examples of perfect proportion and finish, the Romans endowed it with new resources and started it on wholly new lines of development of far-reaching importance.

CONSTRUCTION. The constructive methods of the Romans varied with the conditions and resources of different provinces,

but were everywhere dominated by the same practical spirit. Their vaulted architecture demanded for the support of its enormous weights and for resistance to its disruptive thrusts, piers and buttresses of great mass. To construct these wholly of cut stone appeared preposterous and wasteful to the Roman. Italy abounds in clay, lime, and a volcanic product, *pozzolana*, which makes an admirable hydraulic cement. With these materials it was possible to employ unskilled labor for the great bulk of this massive masonry, and to erect with the greatest rapidity and in the most economical manner those stupendous piles which, even in their ruin, excite the admiration of every beholder.

STONE, CONCRETE, AND BRICK MASONRY. For buildings of an externally decorative character such as temples, arches of triumph, and amphitheatres, as well as in all places where brick and concrete were not easily obtained, stone was employed. The walls were built by laying up the inner and outer faces in *ashlar* or cut stone, and filling in the intermediate space with rubble (random masonry of uncut stone) laid up in cement, or with concrete of broken stone and cement in successive layers, forming a conglomerate closely united with the face-masonry. In Syria and Egypt the local preference for stones of enormous size was gratified, and even surpassed, as in Herod's terrace-walls for the temple at Jerusalem (p. 39), and in the splendid structures of Palmyra and Baalbec. In Italy, however, stones of moderate size were preferred, and when blocks of unusual dimensions occur they are in many cases marked with false joints, dividing them into apparently smaller blocks, lest they should dwarf the building by their large scale. The general use in the Augustan period

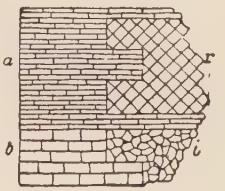


FIG. 48.—ROMAN WALL MASONRY.

a, Brickwork; b, Tufa ashlar; r, Opus reticulatum; i, Opus incertum.

of marble for a decorative lining or wainscot in interiors led in time to the objectionable practice of coating buildings of concrete with an apparel of sham marble masonry, by carving false joints upon an external veneer of thin slabs of that material. Ordinary concrete walls were frequently faced with small blocks of tufa, called according to the manner of its application *opus reticulatum*, *opus incertum*, *opus spicatum*, etc. (Fig. 48). In most cases, however, the facing was of carefully executed brickwork, covered sometimes by a coating of stucco. The bricks were large, measuring from one to two feet square where used for quoins or arches, but triangular where they served only as facings. Bricks were also used in the construction of skeleton ribs for concrete vaults of large span.

DECORATION. The temple of Castor and Pollux in the Forum (long miscalled the temple of Jupiter Stator), is a typical example of Roman architectural decoration, in which richness was preferred to the subtler refinements of design (see Fig. 44). The splendid figure-sculpture which adorned the Greek monument would have been inappropriate on the theatres and thermæ of Rome or the provinces, even had there been the taste or the skill to produce it. Conventional carved ornament was substituted in its place, and developed into a splendid system of highly decorative forms. Two principal elements appear in this decoration—the acanthus-leaf, as the basis of a whole series of wonderfully varied motives; and symbolism, represented principally by what are technically termed *grotesques*—combinations of apparently incongruous natural forms, as when an infant's body terminates in a bunch of foliage (Fig. 40). Only to a limited extent do we find true sculpture employed as decoration, and that mainly for triumphal arches or memorial columns.

The architectural mouldings were nearly always carved, in accordance with the prevailing Roman taste for richness, the Greek water-leaf and egg-and-dart forming the basis of most

of the enrichments; but these were greatly elaborated and treated with more minute detail than the Greek prototypes. Friezes and bands were commonly ornamented with the foliated scroll or *rinceau*, which was as characteristic of Roman art as the anthemion was of the Greek. It consists of a continuous stem throwing out alternately on either side branches which curl into spirals and are richly adorned with rosettes,

FIG. 49.—ROMAN CARVED ORNAMENT.

(Lateran Museum.)

acanthus-leaves, scrolls, tendrils, and blossoms. In the best examples the detail was modelled with great care and minuteness, and the motive itself was treated with extraordinary variety and fertility of invention. A derived and enriched form of the anthemion was sometimes used for bands and friezes; and grotesques, dolphins, griffins, infant genii, wreaths, festoons, ribbons, eagles, and masks are also common features in Roman relief carving.

The Romans made great use of paneling and of moulded plaster in their interior decoration, especially for ceilings. The paneling of domes and vaults, in various geometric forms

pleasing combined, was usually roughly shaped in their first construction and finished afterward in stucco with rich mouldings and rosettes (Fig. 50). In works of a small scale the panels and decorations were wrought in relief in a heavy coating of plaster applied to the finished structure, and these stucco reliefs are among the most refined and charming products of Roman art. (Baths of Titus; baths at Pompeii; Palace of the Cæsars and tombs at Rome.)

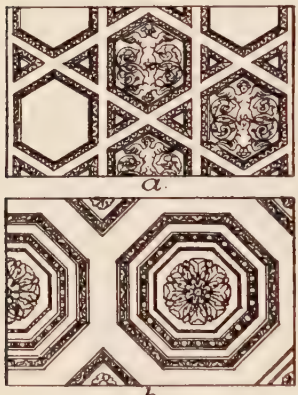


FIG. 50.—ROMAN CEILING PANELS. (*a, From Palmyra; b, Basilica of Constantine.*)

COLOR DECORATION. Plaster was also used as ground for painting, executed in distemper, in fresco, or by the encaustic process, wax liquefied by a hot iron being the medium for applying the color in the latter case. Pompeii and Herculanum furnish countless examples of brilliant wall-painting in which strong primary colors form the ground, and a semi-naturalistic, semi-fantastic representation of figures, architecture and landscape is mingled with festoons, vines, and purely conventional ornament. Mosaic was also employed to decorate floors and wall-spaces, and sometimes for ceilings.* The later imperial baths and palaces were especially rich in mosaic of the kind called opus Grecanicum, executed with numberless minute cubes of stone or glass, as in the Baths of Caracalla and the Villa of Hadrian at Tivoli.

To the walls of monumental interiors, such as temples, basilicas, and thermæ, splendor of color was given by veneering them with thin slabs of rare and richly colored marble.

* See Van Dyke's *History of Painting*, p. 39.

No limit seems to have been placed upon the costliness or amount of these precious materials. Byzantine architecture borrowed from this practice its system of interior color decoration.

CHAPTER IX

ROMAN ARCHITECTURE — *Continued*

BOOKS RECOMMENDED: Same as for Chapter VIII. Also, Adam, *Ruins of the Palace of Spalatro.* Cameron, *Description of the Baths of the Romans.* Clérisseau, *Monuments antiques de Nîmes.* Mau, tr. by Kelsey, *Pompeii, its Life and Art.* Mazois, *Ruines de Pompeii.* Niccolini, *Le Case ed i Monumenti di Pompeii.* Von Presuhn, *Die neueste Ausgrabungen zu Pompeii.* Wood, *Ruins of Palmyra and Baalbec.* Zettler and Diehl, Spalato, *Le Palais de Dioclétian.*

THE ETRUSCAN STYLE. Although the first Greek architects were employed in Rome as early as 493 B.C., the architecture of the Republic was practically Etruscan until nearly 100 B.C. Its monuments, consisting mainly of city walls, tombs, and temples, are all marked by a general uncouthness of detail, denoting a lack of artistic refinement, but they display considerable constructive skill. In the Etruscan walls we meet with both polygonal and regularly coursed masonry; in both kinds the true arch appears as the almost universal form for gates and openings. A famous example is the Augustan Gate at Perugia, a late work rebuilt about 40 B.C., but thoroughly Etruscan in style. At Volaterræ (Volterra) is another arched gate, and in Perugia fragments of still another appear built into the modern walls.

The Etruscans built both structural and excavated tombs; they consisted in general of a single chamber with a slightly arched or gabled roof, supported in the larger tombs on heavy square piers. The interiors were covered with pictures; externally there was little ornament except about the gable and doorway. The latter had a stepped or moulded frame with

curious *crossettes* or ears projecting laterally at the top. The gable recalled the wooden roofs of Etruscan temples, but was coarse in detail, especially in its mouldings. Sepulchral monuments of other types are also met with, such as *cippi* or memorial pillars, sometimes in groups of five on a single pedestal (tomb at Albano).

Among the temples of Etruscan style that of **Jupiter Capitolinus** on the Capitol at Rome, destroyed by fire in 80 B.C., was the chief. Three narrow chambers side by side formed a cella nearly square in plan, preceded by a hexastyle porch of huge Doric, or rather Tuscan, columns arranged in three aisles, widely spaced and carrying ponderous wooden architraves, The roof was of wood; the cymatium and ornaments, as well as the statues in the pediment, were of terra-cotta, painted and gilded. The details in general showed acquaintance with Greek models, which appeared in debased and awkward imitations of triglyphs, cornices, antefixæ, etc.

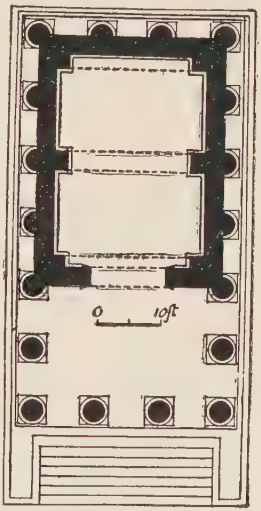


FIG. 51.—TEMPLE FORTUNA VIRILIS. PLAN.

GREEK STYLE. The victories of Marcellus at Syracuse, 212 B.C., Fabius Maximus at Tarentum (209 B.C.), Flaminius (196 B.C.), Mummius (146 B.C.), Sulla (86 B.C.), and others in the various Greek provinces, steadily increased the vogue of Greek architecture and the number of Greek artists in Rome. The temples of the last two centuries B.C., and some of earlier date, though still Etruscan in plan, were in many cases strongly Greek in the character of their details. A few have remained to our time in tolerable preservation. The temple of **Fortuna**

Virilis (really of Fors Fortuna?), of the second century (?) B.C., is a tetrastyle prostyle pseudoperipteral temple with a high *podium* or base, a typical Etruscan cella, and a deep porch, now walled up, but thoroughly Greek in the elegant details of its Ionic order (Fig. 51). Two circular temples, both called erroneously **Temples of Vesta,** one at Rome near the Cloaca Maxima, the other at Tivoli (Fig. 52), belong among the monuments of Greek style. The first was probably dedicated to Hercules, the second probably to the Sibyls; the latter being much the better preserved of the two. Both were surrounded by peristyles of eighteen Corinthian columns, and probably covered by conical roofs with gilded bronze tiles. The Corinthian order appears here complete with its modillion cornice, but the crispness of the detail and the fineness of the execution are Greek and not Roman. These temples date from about 72 B.C., though the one at Rome was probably rebuilt in the first century A.D.

FIG. 52.—CIRCULAR TEMPLE. TIVOLI.

IMPERIAL ARCHITECTURE: AUGUSTAN AGE. Even in the temples of Greek style Roman conceptions of plan and composition are dominant. The Greek architect was not free to reproduce textually Greek designs or details, however strongly he might impress with the Greek character whatever he touched. The demands of imperial splendor and the building

of great edifices of varied form and complex structure, like the thermæ and amphitheatres, called for new adaptations and combinations of planning and engineering. The reign of Augustus (27 B.C.–14 A.D.) inaugurated the imperial epoch, but many works erected before and after his reign properly belong to the Augustan age by right of style. In general, we find in the works of this period the happiest combination of Greek refinement with Roman splendor. It was in this period that Rome first assumed the aspect of an opulent and splendid metropolis, though the way had been prepared for this by the regularization and adornment of the Roman Forum and the erection of many temples, basilicas, fora, arches, and theatres during the generation preceding the accession of Augustus. His reign saw the inception or completion of the portico of Octavia, the Augustan forum, the Septa Julia, the first Pantheon, the adjoining Thermæ of Agrippa, the theatre of Marcellus, the first of the imperial palaces on the Palatine, and a long list of temples, including those of the Dioscuri (Castor and Pollux), of Mars Ultor, of Jupiter Tonans on the Capitol, and others in the provinces; besides colonnades, statues, arches, and other embellishments almost without number.

LATER IMPERIAL WORKS. With the successors of Augustus splendor increased to almost fabulous limits, as, for instance, in the vast extent and the prodigality of ivory and gold in the famous Golden House of Nero. After the great fire in Rome, presumably kindled by the agents of this emperor, a more regular and monumental system of street-planning and building was introduced, and the first municipal building-law was decreed by him. To the reign of Vespasian (68–79 A.D.) we owe the rebuilding in Roman style and with the Corinthian order of the temple of Jupiter Capitolinus, the Baths of Titus, and the beginning of the Flavian amphitheatre or Colosseum. The two last-named edifices both stood on the site of Nero's Golden House, of which the greater part

was demolished to make way for them. During the last years of the first century the Arch of Titus was erected, the Colosseum finished, amphitheatres built at Verona, Pola, Reggio, Tusculum, Nîmes (France), Constantine (Algiers), Pompeii and Herculanum (these last two cities and Stabiæ rebuilt after the earthquake of 63 A.D.), and arches, bridges, and temples erected all over the Roman world.

The first part of the second century was distinguished by the splendid architectural achievements of the reigns of Trajan (98–117) and Hadrian (117–138 A.D.). The works of this great age were marked by great dignity and beauty, with a tendency toward Greek simplicity and refinement; they include the Forum and Basilica of Trajan and the Pantheon, besides many splendid works in the provinces. During the latter part of the century a very interesting series of buildings were erected in the Hauran (Syria), in which Greek and Syrian workmen under Roman direction produced examples of vigorous stone architecture of a mingled Roman and Syrian character.

The most remarkable thermæ of Rome belong to the third century—those of Caracalla (211–217 A.D.) and of Diocletian (284–305 A.D.)—their ruins to-day ranking among the most imposing remains of antiquity. In Syria the temples of the Sun at Baalbec and Palmyra (273 A.D., under Aurelian), and the great palace of Diocletian at Spalato, in Dalmatia (300 A.D.), are still the wonder of the few travellers who reach those distant spots.

While during the third and fourth centuries there was a marked decline in purity and refinement of detail, many of the later works of the period display a remarkable freedom and originality in conception. But these works are really not Roman, they are foreign, that is, provincial products; and the transfer of the capital to Byzantium revealed the increasing degree in which Rome was coming to look to the East for her strength and her art.

TEMPLES. The Romans built both rectangular and circular temples, and there was much variety in their treatment. In the rectangular temples a high *podium*, or basement, was substituted for the Greek stepped stylobate, and the prostyle plan was more common than the peripteral. The cella was relatively short and wide, the front porch inordinately deep, and sometimes divided by longitudinal rows of columns into three aisles. In most cases the exterior of the cella in prostyle temples was decorated by engaged columns. A barrel vault gave the interior an aspect of spaciousness impossible with the Greek system of a wooden ceiling supported on double ranges of columns. In the place of these, free or engaged columns along the side-walls received the ribs of the vaulting. Between these ribs the ceiling was richly panelled or coffered, and sumptuously gilded. The temples of **Fortuna Virilis** (Fig. 51) and of **Faustina** at Rome (the latter built 141 A.D., and its ruins incorporated into the modern church of S. Lorenzo in Miranda), and the beautiful and admirably preserved

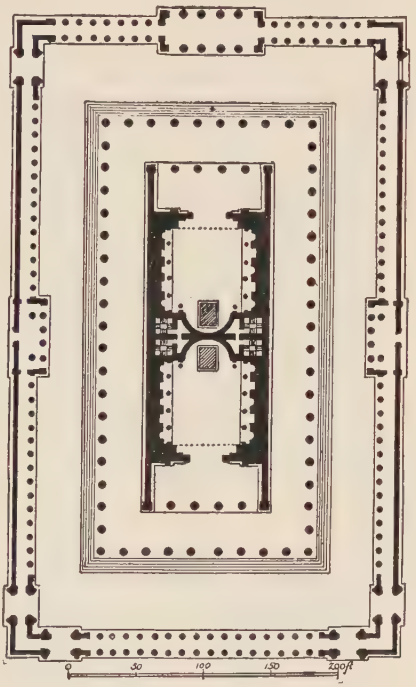


FIG. 53.—TEMPLE OF VENUS AND ROME. PLAN.

Maison Carrée, at Nîmes (France; 4 A.D.), are examples of this type. In the temples of **Concord,** Julius, and **Vespasian,** all in the Forum, the porch was on the long side of the cella. Some of the larger temples were peripteral. The temple of the **Dioscuri** (Castor and Pollux) in the Forum, was one of the most magnificent of these, certainly the richest in detail (Fig. 44). Very remarkable was the double temple of **Venus and Rome,** east of the Forum, built by the Emperor Hadrian about 130 A.D. (Fig. 53), a vast pseudodipteral edifice with two cellas meeting back to back in the center. The temple stood in the midst of an imposing columnar peribolus entered by magnificent gateways. Other important temples have already been mentioned.

Besides the two circular temples already described, the temple of Vesta, adjoining the House of the Vestals, at the east end of the Forum, should be mentioned. At Baalbec is a circular temple whose entablature curves inward between the widely-spaced columns until it touches the cella in the middle of each intercolumniation. It illustrates the caprices of design which sometimes resulted from the disregard of tradition and the striving after originality (273 A.D.).

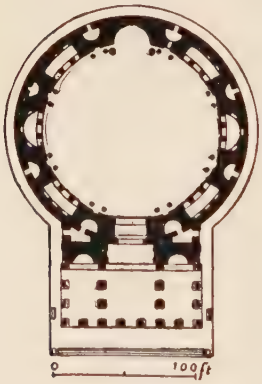


FIG. 54.—PLAN OF THE PANTHEON.

THE PANTHEON. The noblest of all circular temples of Rome and of the world was the **Pantheon.** It was built by Hadrian, 117–138 A.D., on the site of the earlier rectangular temple of the same name erected by Agrippa. It measures 142 feet in diameter internally; the wall is 20 feet thick and supports a hemispherical dome rising to a height of 140 feet (Figs. 54, 55). Light is

admitted solely through a round opening 28 feet in diameter at the top of the dome, the simplest and most impressive method of illumination conceivable. The rain and snow that enter produce no appreciable effect upon the temperature of the vast hall. There is a single entrance, with noble bronze doors, admitting directly to the interior, around which seven niches, alternately rectangular and semi-circular in plan and fronted by Corinthian columns, lighten without weakening, the mass of the encircling wall. This wall was originally incrusted with rich marbles, and the great dome, adorned with deep coffering in rectangular panels, was decorated with rosettes and mouldings in gilt stucco. The dome appears to consist of a shell of brick with numerous arches and ribs covered with a heavier external shell of concrete. The interior paneling appears to the writer to have been hewn out of the mass of the brick vault regardless of the ribs and arches in its structure.

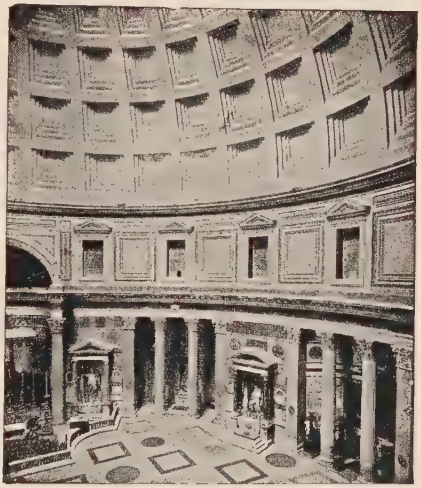


FIG. 55.—INTERIOR OF THE PANTHEON.

The exterior (Fig. 56) was less successful than the interior. The gabled porch of sixteen superb granite columns 50 feet high, three-aisled in plan after the Etruscan mode, and covered originally by a ceiling of bronze, was a rebuilding with the materials and on the plan of the original pronaos of the Pantheon of Agrippa. The circular wall behind it is faced with

fine brickwork, and displays, like the dome, many curious arrangements of discharging arches, reminiscences of traditional constructive precautions although of doubtful practical value as employed here. A revetment of marble below and plaster above once concealed this brick facing. The portico, in spite of its too steep gable (once filled with a 'gigantomachia" in gilt bronze) and its somewhat awkward associa-

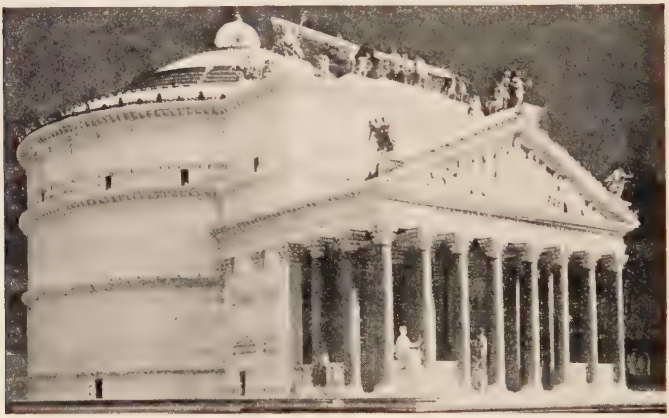


FIG. 56.—EXTERIOR OF THE PANTHEON.
(From model in Metropolitan Museum, New York.)

tion with a round building, is nevertheless a noble work, and the Pantheon, taken as a whole, is one of the great masterpieces of the world's architecture.

FORA AND BASILICAS. The fora were the places for general public assemblage. The chief of those in Rome, the **Forum Magnum,** or **Forum Romanum,** was at first merely an irregular vacant space, about and in which, as the focus of the civic life, temples, halls, colonnades, and statues gradually accumulated. These chance aggregations the systematic Roman mind reduced in time to orderly and monumental form; successive emperors extended them and added new fora at enormous

cost and with great splendor of architecture. Those of Julius, Augustus, Vespasian, and Nerva (or Domitian), adjoining the Roman Forum, were magnificent enclosures surrounded by high walls and single or double colonnades. Each contained a temple or basilica, besides gateways, memorial columns or arches, and countless statues. The **Forum of Trajan** surpassed all the rest; it covered an area of thirty-five thousand square yards, and included, besides the main area, entered through a triumphal arch, the Basilica Ulpia, the temple of Trajan, and his colossal Doric column of Victory. Both in size and beauty it ranked as the chief architectural glory of the city (Fig. 57). Its architect was a Greek, Apollodorus of Damascus. The six fora together contained thirteen temples, three basilicas, eight triumphal arches, a mile of porticos, and a number of other public edifices.* Besides these, a network of colonnades covered large tracts of the city, affording sheltered communication in every direction, and here and there expanding into squares or gardens surrounded by peristyles.

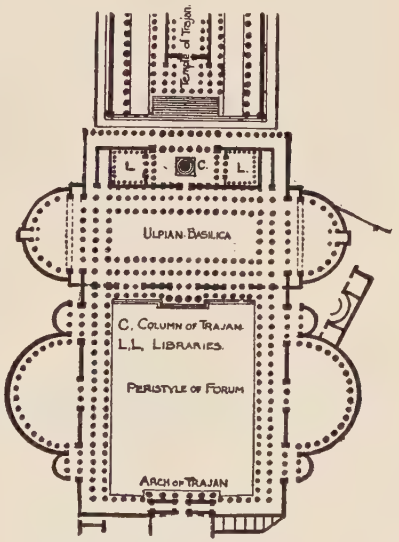


FIG. 57.—FORUM AND BASILICA OF TRAJAN.

The public business of Rome, both judicial and commercial, was largely transacted in the *basilicas*, large buildings con-

* Lanciani: *Ancient Rome in the Light of Recent Discoveries*, p. 89.

sisting usually of a wide and lofty central nave flanked by lower side-aisles, and terminating at one or both ends in an apse or semicircular recess called the *tribune*, in which were the seats for the magistrates. The side-aisles were separated from the nave by columns supporting a clearstory wall, pierced by windows above the roofs of the side-aisles. In some cases the latter were two stories high, with galleries; in others the central space was open to the sky, as at Pompeii, suggesting the derivation of the basilica from the open square surrounded by colonnades, or from the forum itself, with which we find it usually associated. The most important basilicas in Rome were the **Sempronian**, the **Æmilian** (about 54 B.C.), the **Julian** in the Forum Magnum (51 B.C.), and the **Ulpian** in the Forum of Trajan (113 A D). The last two were perhaps open basilicas, only the side-aisles being roofed. The Ulpian (Fig. 57) was the most magnificent of all, and in conjunction with the Forum of Trajan formed one of the most imposing of those monumental aggregations of columnar architecture which contributed so largely to the splendor of the Roman capital.

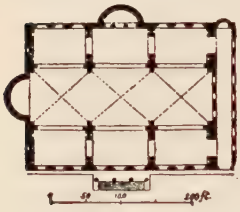


FIG. 58.—BASILICA OF CONSTANTINE. PLAN.

These monuments frequently suffered from the burning of their wooden roofs. It was Constantine who completed the first vaulted and fireproof basilica, begun by his predecessor and rival, Maxentius, on the site of the former Temple of Peace (Figs. 58, 59). Its design reproduced on a grand scale the plan of the tepidarium halls of the thermæ, the side-recesses of which were converted into a continuous side-aisle by piercing arches through the buttress-walls that separated them. Above the imposing vaults of these recesses and under the cross-vaults of the nave were windows admitting abundant

light. A *narthex*, or porch, preceded the hall at one end; there were also a side entrance from the Via Sacra, and an apse or tribune for the magistrates opposite each of these entrances. The dimensions of the main hall (325 × 85 feet), the height of its vault (117 feet), and the splendor of its columns and incrustations excited universal admiration, and exercised a powerful influence on later architecture.

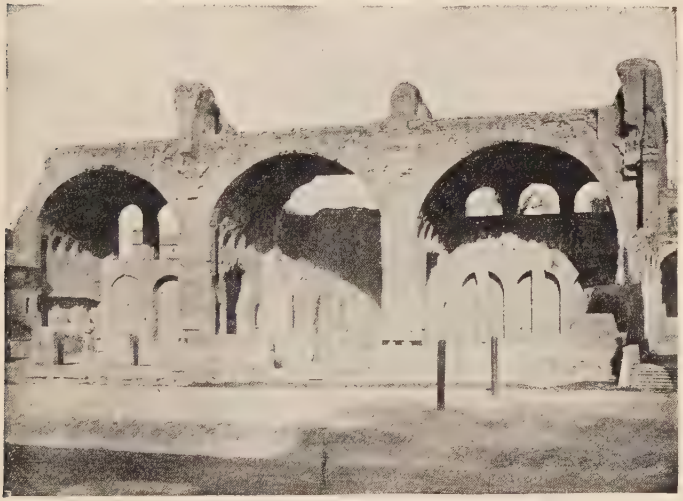


FIG. 59.—BASILICA OF CONSTANTINE. RUINS.

THERMÆ. The leisure of the Roman people was largely spent in the great baths, or *thermæ*, which took the place substantially of the modern club. The establishments erected by the emperors for this purpose were vast and complex congeries of large and small halls, courts, and chambers, combined with a masterly comprehension of artistic propriety and effect in the sequence of oblong, square, oval, and circular apartments, and in the relation of the greater to the lesser masses. They were a combination of the Greek *palæstra* with the

Roman *balnea*, and united in one harmonious design great public swimming-baths, private baths for individuals and families, places for gymnastic exercises and games, courts, peristyles, gardens, halls for literary entertainments, lounging rooms, and all the complex accommodation required for the service of the whole establishment. They were built with apparent disregard of cost, and adorned with splendid extravagance. The earliest were the **Baths of Agrippa** (27 B.C.) behind the Pantheon; next may be mentioned those of **Titus**, built on the substructions of Nero's Golden House. The remains of the **Thermæ of Caracalla** (211 A.D.) form the most extensive mass of ruins in Rome, and clearly display the admirable planning of this and similar establishments. A gigantic block of buildings containing the three great halls for cold, warm, and hot baths, stood in the centre of a vast enclosure surrounded by private baths, *exedræ*, and halls for lecture audiences and other gatherings. The enclosure was adorned with statues, flower-gardens, and places for out-door games. The **Baths of Diocletian** (284–305 A.D.) embodied this arrangement on a still more extensive scale; they could accommodate 3,500 bathers at once, and their ruins cover a broad territory near the railway terminus of the modern city. The church of S. Maria degli Angeli was formed by Michael Angelo out of the *tepidarium* of these baths—a colossal hall 340 × 87 feet, and 90 feet high. The original vaulting and columns are still

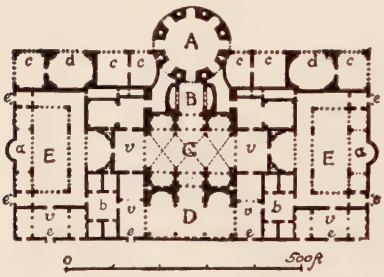


FIG. 60.—THERMÆ OF CARACALLA. PLAN OF CENTRAL BLOCK.

A, Caldarium, or Hot Bath; B, Intermediate Chamber; C, Tepidarium, or Warm Bath; D, Frigidarium, or Cold Bath; E, Peristyles; a, Gymnastic Rooms; b, Dressing Rooms; c, Cooling Rooms; d, Small Courts; e, Entrances; v, Vestibules.

intact, and the whole interior most imposing, in spite of later stucco disfigurements. The circular *laconicum* (sweat-room) serves the porch to the present church. It was in the building of these great halls that Roman architecture reached its most original and characteristic expression. Wholly unrelated to any foreign model, they represent distinctively Roman ideals, both as to plan and construction.

PLACES OF AMUSEMENT. The earliest Roman theatres differed from the Greek in having a nearly semicircular plan, and in being built up from the level ground, not excavated in a hillside (Fig. 61). The first theatre was of wood, built by Mummius 145 B.C., and it was not until ninety years later that stone was first substituted for the more perishable material, in the theatre of Pompey. The **Theatre of Marcellus** (23–13 B.C.) is in part still extant, and later theatres in Pompeii, Orange (France), and in the Asiatic provinces are in excellent preservation. The orchestra was not, as in the Greek theatre, reserved for the choral dance, but was given up to spectators of rank; the stage was adorned with a permanent architectural background of columns and arches, and sometimes roofed with wood, and an arcade or colonnade surrounded the upper tier of seats.

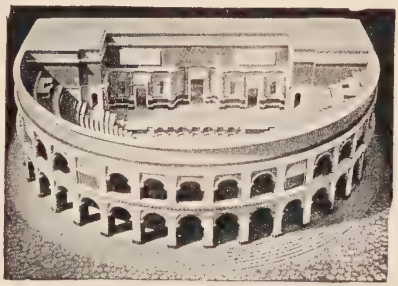


FIG. 61.—ROMAN THEATRE. (HERCULANUM.) (From model.)

The amphitheatre was a still more distinctively Roman edifice. It was elliptical in plan, surrounding an elliptical arena, and built up with continuous encircling tiers of seats. The earliest stone amphitheatre was erected by Statilius Taurus in the time of Augustus. It was practically identical in design

with the later and much larger Flavian amphitheatre, commonly known as the **Colosseum,** begun by Vespasian and completed 82 A.D. (Fig. 62). This immense structure measured 607 × 506 feet in plan and was 180 feet high; its reputed capacity of 87,000 spectators is a notorious over-estimate. Engaged columns of the Tuscan, Ionic, and Corinthian orders decorated three stories of the exterior; the fourth was a nearly unbroken wall with slender Corinthian pilasters. Constructed

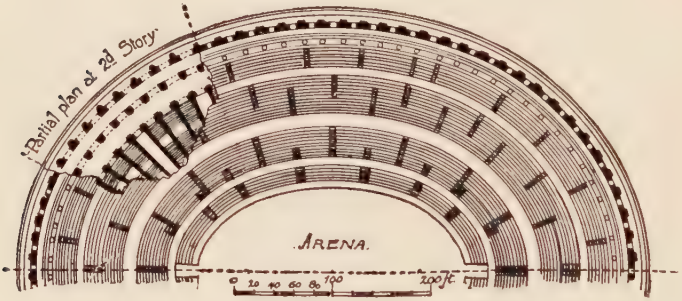


FIG. 62.—COLOSSEUM. HALF PLAN.

of travertine, concrete, and tufa, the Colosseum, with its imposing exterior, almost sublime by its scale and seemingly endless repetition, but lacking in refinement of detail and dedicated to bloody and cruel sports, was a characteristic product of the Roman character and civilization. At Verona, Pola, Capua, and many cities in the foreign provinces there are well-preserved remains of similar structures.

Closely related to the amphitheatre were the circus and the stadium. The **Circus Maximus** between the Palatine and Aventine hills was the oldest of those in Rome. That erected by Caligula and Nero on the site afterward partly occupied by St. Peter's, was more splendid, and is said to have been

capable of accommodating over three hundred thousand spectators after its enlargement in the fourth century. The long, narrow race-course was divided into two nearly equal parts by a low parapet, the *spina*, on which were the goals (*metæ*) and many small decorative structures and columns. One end of the circus, as of the stadium also, was semicircular; the other was segmental in the circus, square in the stadium; a colonnade or arcade ran along the top of the building, and the entrances and exits were adorned with monumental arches.

OTHER PUBLIC BUILDINGS. The earliest of administrative buildings was the **Tabularium** or Hall of Archives, built in 78 B.C. against the steep slope of the Capitoline hill, facing the Forum. It was the first building to employ superposed columnar arcades for the façade. On the north side of the Forum was the **Curia** or Senate House, a hall whose remains are incorporated in the church of San Adriano. At Pompeii are remains of a triple court house called the Curiæ, and of a handsome public hall doubtfully identified as the Senaculum or Hall of the Decurions.

TRIUMPHAL ARCHES AND COLUMNS. Rome and the provincial cities abounded in monuments commemorative of victory, usually single or triple arches with engaged columns and rich sculptural adornments, or single colossal columns supporting statues. The arches were characteristic products of Roman design, and some of them deserve high praise for the excellence of their proportions and elegance of their details. There were in Rome in the second century A.D., thirty-eight of these monuments. The **Arch of Titus** (71–82 A.D.) is the simplest and most perfect of those still extant in Rome; the arch of **Septimius Severus** in the Forum (203 A.D.) and that of **Constantine** (330 A.D.) near the Colosseum, are more sumptuous but less pure in detail. The last-named was in part enriched with sculptures taken from the earlier arches of Trajan

and Domitian. The statues of Dacian captives on the attic (*attic* = a subordinate story added above the main cornice) of this arch were a fortunate addition, furnishing a *raison d'etre* for the columns and broken entablatures on which they rest. Memorial columns of colossal size were erected by several emperors, both in Rome and abroad. Those of **Trajan** and of **Marcus Aurelius** are still standing in Rome in perfect preservation. The first was 140 feet high including the pedestal and the statue which surmounted it; its capital marked the height of the ridge levelled by the emporer for the forum on which the column stands. Its most striking peculiarity is the spiral band of reliefs winding around the shaft from bottom to top and representing the Dacian campaigns of Trajan. The other column is of similar design and dimensions, but greatly inferior to the first in execution. Both are really towers, with interior stair-cases leading to the top.

FIG. 63.—ARCH OF CONSTANTINE.

TOMBS. The Romans developed no special and national type of tomb, and few of their sepulchral monuments were of large dimensions. The most important in Rome were the pyramid of **Caius Cestius** (late first century B.C.), and the circular tombs of **Cecilia Metella** (60 B.C.), **Augustus** (14 A.D.) and **Hadrian,** now the Castle of S. Angelo (138 A.D.). The latter was composed of a huge cone of marble supported on a cylindrical structure 230 feet in diameter standing on a square podium 300 feet long and wide. The cone was once thought to have terminated in the pine-cone of the Pigna in the Vatican;

this, however, was always a fountain terminal. In the Mausoleum of Augustus a mound of earth planted with trees crowned a similar circular base of marble on a podium 220 feet square, now buried.

The smaller tombs varied greatly in size and form. Some were vaulted chambers, with graceful internal painted decorations of figures and vine patterns combined with low-relief enrichments in stucco. Others were designed in the form of altars or sarcophagi, as at Pompeii; while others again resembled ædiculæ, little temples, shrines, or small towers in several stories of arches and columns, as at St. Rémy (France).

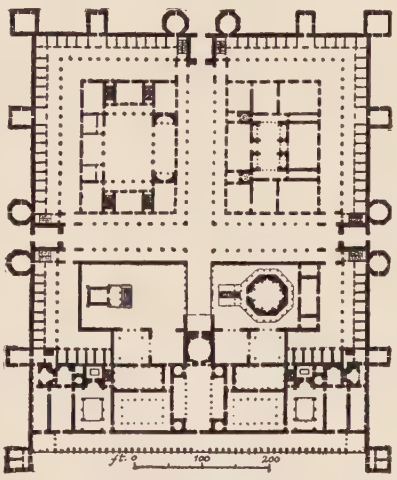


FIG. 64.—PALACE OF DIOCLETIAN. SPALATO.

PALACES AND DWELLINGS. Into their dwellings the Romans carried all their love of ostentation and personal luxury. They anticipated in many details the comforts of modern civilization in their furniture, their plumbing and heating, and their utensils. Their houses may be divided into four classes: the palace, the villa, the *domus* or ordinary house, and the *insula* or many-storied tenement built in compact blocks. The first three alone concern us.

The imperial palaces on the Palatine Hill comprised a wide range in style and variety of buildings, beginning with the first simple house of Augustus (26 B.C.), burnt and rebuilt 3 A.D. Tiberius, Caligula, and Nero added to the Augustan

group; Domitian rebuilt a second time and enlarged the palace of Augustus, and Septimius Severus remodelled the whole group, adding to it his own extraordinary seven-storied palace, the Septizonium. The ruins of these successive buildings have been carefully excavated, and reveal a remarkable combination of dwelling-rooms, courts, temples, libraries, basilicas, a stadium, peristyles, fountains, terraces, and covered passages. These were adorned with a profusion of precious marbles, mosaics, columns, and statues. Parts of the demolished palace of Nero were incorporated in the substructions of the Baths of Titus. The beautiful arabesques and plaster reliefs which adorned them were the inspiration of much of the fresco and stucco decoration of the Italian Renaissance. At Spalato, in Dalmatia, are the extensive ruins of the great **Palace of Diocletian**, which was laid out on the plan of a Roman camp, with two intersecting avenues (Fig. 64). It comprised a temple, mausoleum, basilica, and other structures, besides those portions devoted to the purposes of a royal residence.

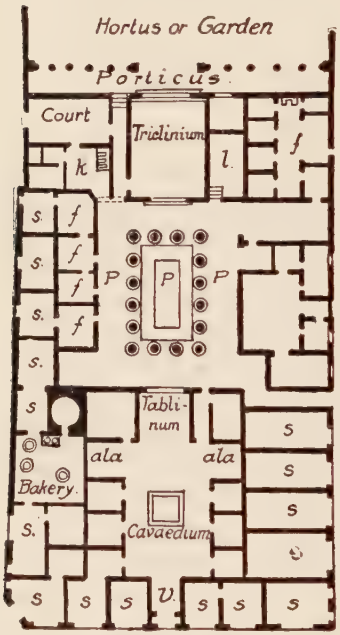


FIG. 65.—HOUSE OF PANSA, POMPEII.

s, Shops; v, Vestibule; f, Family Rooms; k, Kitchen; l, Lararium; P, P, P, Peristyles.

The villa was in reality a country palace, arranged with

special reference to the prevailing winds, exposure to the sun and shade, and the enjoyment of a wide prospect. Baths, temples, *exedræ*, theatres, tennis-courts, sun-rooms, and shaded porticos were connected with the house proper, which was built around two or three interior courts or peristyles. Statues, fountains, and colossal vases of marble adorned the grounds, which were laid out in terraces and treated with all the fantastic arts of the Roman landscape-gardener. The most elaborate and extensive villa was that of **Hadrian,** at Tibur (Tivoli); its ruins, covering hundreds of acres, form one of the most interesting spots to visit in the neighborhood of Rome.

There are few remains in Rome of the **domus** or private house. Two, however, have left remarkably interesting ruins—the **Atrium Vestæ,** or the House of the Vestal Virgins, east of the Forum, a well-planned and extensive house surrounding a cloister or court; and the **House of Livia,** or Germanicus, so-called, on the Palatine Hill, the walls and decorations of which are excellently preserved. The typical Roman house in a provincial town is best illustrated by the ruins of Pompeii and Herculanum, which, buried by an eruption of Vesuvius in 79 A.D., have been partially excavated since 1721. The Pompeiian house (Fig. 65) consisted of several courts or *atria*, some of which were surrounded by colonnades and called *peristyles*. The front portion was reserved for shops, or presented to the street a wall unbroken save by the entrance; all the rooms and chambers opened upon the interior courts, from which alone they borrowed their light. In the brilliant climate of southern Italy windows were little needed, as sufficient light was admitted by the door, closed only by portieres for the most part; especially as the family life was passed mainly in the shaded courts, to which fountains, parterres of shrubbery, statues, and other adornments lent their inviting charm. The general plan of these houses seems to have been of Greek origin, as well as the system of decoration used on

the walls. These, when not wainscoted with marble, were covered with fantastic, but often artistic, painted decorations, in which an imaginary architecture, a fantastic and arbitrary perspective, illusory pictures, and highly finished figures were the chief elements. These were executed in brilliant colors with excellent effect. The houses were lightly built, with wooden ceilings and roofs instead of vaulting, and usually with but one story on account of the danger from earthquakes. That the workmanship and decoration were in the capital often superior to what was to be found in a provincial town like Pompeii, is evidenced by beautiful wall-paintings and reliefs discovered in Rome in 1879 and now preserved in the Museo delle Terme. More or less fragmentary remains of Roman houses have been found in almost every corner of the Roman empire, but nowhere exhibiting as completely as in Pompeii the typical Roman arrangement.

WORKS OF UTILITY. A word should be said about Roman engineering works, which in many cases were designed with an artistic sense of proportion and form which raises them into the domain of genuine art. Such were especially the bridges, in which a remarkable effect of monumental grandeur was often produced by the form and proportions of the arches and piers, and an appropriate use of rough and dressed masonry, as in the Pons Ælius (Ponte S. Angelo), the great bridge at Alcantara (Spain), and the Pont du Gard, near Nîmes, in southern France. The aqueducts are impressive rather by their length, scale, and simplicity, than by any special refinements of design, except where their arches are treated with some architectural decoration to form gates, as in the Porta Maggiore, at Rome.

PROVINCIAL WORKS. Besides the temples, theatres, baths, palaces, tombs and bridges already enumerated, in Palmyra, Baalbec, Nîmes, Orange, Reims, St. Rémy, Alcantara, etc., mention must be made of the extensive works of Roman architecture in northern Africa, especially in Algiers,

at Timgad, Orléansville, El-Djem, Sbeitla, Lambessa and Tebessa, and the remains more recently (1924–25) uncovered by the Count de Provok assisted by French and American archæologists on the sites of ancient Carthage and Utica. The Italian government is carrying on similar explorations in Tripoli on the sites of Leptis Magna and Parva, while in Asia Minor an expedition on behalf of the University of Michigan has thoroughly explored the remains of Antioch in Pisidia. Nearly all the remains thus lately uncovered have been of monuments of the later Imperial age — 3d and 4th centuries A.D. — lacking the finer qualities of the earlier Imperial age in Rome itself, but exhibiting the splendid city-planning and monumental groupings of public monuments characteristic of Roman rule. Mention should also be made of monuments in Syria at Gerasa and in the necropolis of Petra; of city gates at Autun (France) and Treves (Germany, the Porta Nigra); of villas throughout northern Europe, including many in England (*e. g.* at Silchester); and the great Egyptian temples built under the Roman dominion (Esneh, Philae, Kardassy, etc.; see *ante* p. 22). In Paris are still preserved the remains of the palace and baths of Julian. Asia Minor abounds in splendid Greco-Roman theatres, temples and other ruins.

MONUMENTS. (Those which have no important extant remains are given in italics.) TEMPLES: *Jupiter Capitolinus*, 600 B.C.; *Ceres, Liber, and Libera*, 494 B.C. (ruins of later rebuilding in S. Maria in Cosmedin); *first T. of Concord* (rebuilt in Augustan age), 254 B.C.; *first marble temple* in *portico of Metellus*, by a Greek, Hermodorus, 143 B.C.; temples of Fortune at Prænestc and at Rome, and of Vesta (Hercules) at Rome, 83–78 B.C.; of Vesta (Sibyls) at Tivoli, and of Hercules at Cori, 72 B.C.; *first Pantheon*, 27 B.C. In Augustan Age temples of *Apollo*, Concord rebuilt, Dioscuri, *Julius*, *Jupiter Stator*, *Jupiter Tonans*, Mars Ultor, Minerva (*at Rome* and Assisi), Maison Carrée at Nîmes, Saturn; at Puteoli, Pola, etc. *T. of Peace; T. Jupiter Capitolinus*, rebuilt 70 A.D.; temple at Brescia. Temple of Vespasian, 96 A.D.; also of *Minerva* in Forum of Nerva; *of Trajan*,

117 A.D.; second Pantheon; T. of Venus and Rome at Rome, and of Jupiter Olympus at Athens, 135–138 A.D.; Faustina, 141 A.D.; many in Syria; temples of Sun at *Rome*, Baalbec, and Palmyra, cir. 273 A.D.; of Romulus, 305 A.D. (porch S. Cosmo and Damiano). PLACES OF ASSEMBLY: FORA—Roman, Julian, 46 B.C.; Augustan, cir. 4 B.C.; *of Peace*, 75 A.D.; Nerva, 97 A.D.; Trajan (by Apollodorus of Damascus, 117 A.D. BASILICAS: *Sempronian*, *Æmilian*, 1st century B.C.; Julian, 51 B.C.; *Septa Julia*, 26 B.C.; the Curia, later rebuilt by Diocletian, 300 A.D. (now Church of S. Adriano); *at Fano*, 10 A.D. (?); Forum and Basilica at Pompeii, 60 A.D.; of Trajan; of Constantine, 310–324 A.D. THEATRES (th.) and AMPHITHEATRES (amp.): th. *Pompey*, 55 B.C.; of *Balbus* and of Marcellus, 13 B.C.; th. and amp. at Pompeii and Herculanum; Colosseum at Rome, 78–82 A.D.; th. at Orange and in Asia Minor; amp. at Albano, Constantine, Nimes, Petra, Pola, Reggio, Trevi, Tusculum, Verona, etc.; amp. Castrense at Rome, 96 A.D. Circuses and stadia at Rome. THERMÆ: of Agrippa, 27 B.C.; *of Nero*, of Titus, 78 A.D.; *Domitian*, 90 A.D.; Caracalla, 211 A.D.; Diocletian, 305 A.D.; *Constantine*, 320 A.D.; Gallienus ("Minerva Medica"), 3d century A.D.; at Pompeii, Stabian Baths, Baths of Forum, etc. CIVIC HALLS: Tabularium, 78 B.C.; Curiæ and Senaculum at Pompeii, 50 B.C. ARCHES: *of Stertinius*, 196 B.C.; *Scipio*, 190 B.C.; *Augustus*, 30 B.C.; Titus, 71–82 A.D.; *Trajan*, 117 A.D.; Severus, 203 A.D.; Constantine, 320 A.D.; of Drusus, Dolabella. Silversmiths, 204 A.D.; Janus Quadrifrons, 320 A.D. (?); all at Rome. Others at Benevento, Ancona, Rimini in Italy; also at Athens, and at Reims and St. Chamas in France. Columns of Trajan, *Antoninus*, Marcus Aurelius at Rome; others at Constantinople, Alexandria, etc. TOMBS: along Via Appia and Via Latina, at Rome; Via Sacra at Pompeii; tower-tombs at St. Rémy in France; rock-cut at Petra; at Rome, of Caius Cestius and Cecilia Metella, 1st century B.C.; of Augustus, 14 A.D.; Hadrian, 138 A.D. PALACES and PRIVATE HOUSES: On Palatine, of Augustus, Tiberius, Nero, Domitian, Septimius Severus, *Elagabalus;* Villa of Hadrian at Tivoli; palaces of Diocletian at Spalato and *of Constantine* at Constantinople. House of Livia on Palatine (Augustan period); of Vestals, rebuilt by Hadrian, cir. 120 A.D. Houses at Pompeii and Herculanum, cir. 60–79 A.D., *e.g.*, of Pansa, of Diomed, of Tragic Poet, of Musician, of M. Holconius, of the Vettii; rustic villa at Boscoreale (walls removed to Metropolitan Museum, New York); Villas of Gordianus ("Tor' de' Schiavi, 240 A.D.), and *of Sallust* at Rome, and *of Pliny* at Laurentium.

CHAPTER X

EARLY CHRISTIAN ARCHITECTURE

BOOKS RECOMMENDED: Bunsen, *Die Basiliken christlichen Roms.* Butler, *Architecture and other Arts in Northern Central Syria; Ancient Architecture in Syria.* Cummings, *A History of Architecture in Italy.* Dehio, *Kirchliche Baukunst des Abendlandes.* Essenwein (Hdbuch d. Arch.), *Ausgänge der klassischen-Baukunst.* Frothingham, *Monuments of Christian Rome.* Hübsch, *Monuments de l'architecture chrétienne.* Lowrie, *Monuments of the Early Church.* Marucchi, *Eléments d'archéologie chrétienne.* Mothes, *Die Basilikenform bei den Christen,* etc. Von Quast, *Die altchristlichen Bauwerke zu Ravenna.* Venturi, *Storia dell' arte Italiana.* De Vogüé, *Syrie Centrale; Églises de la Terre Sainte.*

INTRODUCTORY. The official recognition of Christianity by Licinius and later by Constantine* in the early years of the fourth century A.D., simply legalized an institution which had been for three centuries gathering momentum for its final conquest of the antique world. The new religion rapidly enlisted in its service for a common purpose and under a common impulse races as wide apart in blood and culture as those which had built up the art of imperial Rome. It was Christianity which reduced to civilization in the West the Germanic hordes that had overthrown Rome, bringing their fresh and hitherto untamed vigor to the task of recreating architecture out of the decaying fragments of classic art. So in the East its life-giving influence awoke the slumbering Greek art-instinct

* The celebrated Edict of Milan supposed to have been issued by Constantine in 313 A.D. is now believed to be a forgery.

to new triumphs in the arts of building, less refined and perfect indeed, but not less sublime than those of the Periclean age. Long before the Constantinian edict, the Christians in the Eastern provinces had enjoyed substantial freedom of worship. Meeting often in the private basilicas of wealthy converts, and finding these, and still more the great public basilicas, suited to the requirements of their worship, they early began to build in imitation of these edifices. There are many remains of these early churches in northern Africa and central Syria.

THE BASILICAN STYLE IN ROME. Early Christian art in Europe was at first wholly sepulchral, developing in the catacombs the symbols of the new faith. Once liberated, however, Christianity appropriated bodily for its public rites the basilica-type and the general substance of Roman architecture. Shafts and capitals, architraves and rich linings of veined marble, even the pagan Bacchic symbolism of the vine, it adapted to new uses in its own service. Constantine led the way in architecture, endowing Bethlehem and Jerusalem with splendid churches, and his new capital on the Bosphorus with the first of the three historic basilicas dedicated to the Holy Wisdom (Hagia Sophia). One of the greatest of innovators, he seems to have had a special predilection for circular buildings, and tombs and baptisteries which he erected in this form, especially that known as Santa Costanza (Fig. 66), furnished the prototype for numberless Italian baptisteries in later ages. His baptistery on the Lateran hill was octagonal, with a wooden roof over the central space.

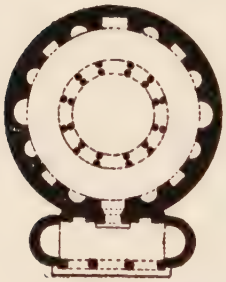


FIG. 66.—STA. COSTANZA, ROME.

The Christian basilica (see Figs. 67, 68) generally comprised

a broad and lofty nave, separated by rows of columns from the single or double side-aisles. The aisles had usually about half the width and height of the nave, and like it were covered with wooden roofs and ceilings. Above the columns which flanked the nave rose the lofty clearstory wall, pierced with windows above the side-aisle roofs and supporting the immense trusses of the roof of the nave. The timbering of the latter was sometimes bare, sometimes concealed by a richly panelled ceiling, carved, gilded, and painted. At the further end of the nave was the sanctuary or apse, with the seats for the clergy on a raised platform, the *bema*, in front of which was the altar. Transepts sometimes expanded to right and left before the altar, under which was the *confessio* or shrine of the titular saint or martyr.

An *atrium* or forecourt surrounded by a covered arcade preceded the basilica proper, the arcade at the front of the church forming a porch or *narthex*, which, however, in some cases existed without the atrium. The exterior was extremely plain; the interior, on the contrary, was resplendent with incrustations of veined marble and with sumptuous decorations in glass mosaic (called *opus Grecanicum*) on a blue or golden ground. Especially rich were the half-dome of the apse and the wall-space surrounding its arch and called the *triumphal arch;* next in decorative importance came the broad band of wall beneath the clearstory windows. Upon these surfaces the mosaic-workers wrought with minute cubes of colored glass pictures and symbols almost imperishable, in which the glow of color and a certain decorative grandeur of effect in the composition went far to atone for the uncouth drawing. With growing wealth and an increasingly elaborate ritual, the furniture and equipments of the church assumed greater architectural importance. A large rectangular space was retained for the choir in front of the bema, and enclosed by a breast-high parapet of marble, richly inlaid. On either side were the

pulpits or *ambones* for the Gospel and Epistle. A lofty canopy was built over the altar, the *ciborium* or *baldaquin,* supported on four marble columns. A few basilicas were built with galleries, as in S. Lorenzo and Sta. Agnese. Adjoining the basilica in the earlier examples were the baptistery and the tomb of the saint, circular or polygonal buildings usually; but in later times these were replaced by the font or baptismal chapel in the church and the *confessio* under the altar.

Of the Constantinian basilicas in Rome, the one dedicated to **St. Peter** was demolished in the fifteenth century; that of **St. John Lateran** has been so disfigured by modern alterations as to be unrecognizable. The former of the two adjoined the site of the martyrdom of St. Peter in the circus of Caligula and Nero; it was five-aisled, 380 feet in length by 212 feet in width. The nave was 80 feet wide and 100 feet high, and the disproportionately high clearstory wall rested on horizontal architraves carried by columns. The impressive dimensions and simple plan of this structure gave it a majesty worthy of its rank as the first church of Christendom. **St. Paul beyond the Walls** (S. Paolo fuori le mura), built in 386 by Theodosius, resembled St. Peter's closely in plan (Figs. 67, 68). Destroyed by fire in 1823, it has been rebuilt with almost its pristine splendor, and is, next to the modern St. Peter's and the Pantheon, the most impressive place of worship in Rome. **Santa Maria Maggiore,*** though smaller in size, is more interesting because it so largely retains internally its original aspect, its Renais-

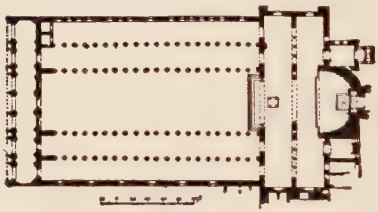


FIG. 67.—PLAN OF THE BASILICA OF ST. PAUL.

* Hereafter the abbreviation S. M. will be generally used instead of the name Santa Maria.

sance ceiling happily harmonizing with its simple antique lines. Ionic columns support architraves to carry the clear-story. In most other examples, St. Paul's included, arches turned from column to column perform this function. The first known monumental use of classic columns as arch-bearers was in the palace of Diocletian at Spalato; it also appears in Syrian buildings of the third and fourth centuries A.D.

FIG. 68.—ST. PAUL BEYOND THE WALLS. INTERIOR.

The basilica remained the model for ecclesiastical architecture in Rome, without noticeable change either of plan or detail, until the time of the Renaissance. All the earlier examples employed columns and capitals taken from ancient ruins, often incongruous and ill-matched in size and order. **San Clemente** (1108), built over the ruins of a sixth-century basilica, has retained almost intact its early aspect, its choir enclosure, baldaquin, and ambones having been well preserved or carefully restored. Other important basilicas are mentioned in the list of monuments on pages 121, 122; of these the most important is **San Lorenzo,** a combination of two buildings, the earlier two-storied portion dating originally from Constantine's days, the nave from the fifth century; but both remodelled by Honorius III early in the thirteenth century.

RAVENNA. The fifth and sixth centuries endowed Ravenna with a number of notable buildings which, with the exception

of the cathedral, demolished in the last century, have been preserved to our day. Subdued by the Byzantine emperor Justinian in 537, Ravenna became the meeting-ground for Early Christian and Byzantine traditions and the basilican and circular plans are both represented. The two churches dedicated to St. Apollinaris, **S. Appolinare Nuovo** (520) in the city, and **S. Apollinare in Classe** (538), in what was formerly the port, are especially interesting for their fine mosaics, and for the impost-blocks interposed above the capitals of their columns to receive the springing of the pier-arches. These blocks appear to be somewhat crude modifications of the fragmentary architraves or entablatures employed in classic Roman architecture to receive the springing of vaults sustained by columns, and became common in Byzantine structures (Fig. 73). The use of external arcading to give some slight adornment to the walls of the second of the above-named churches, and the round bell-towers of brick which adjoined both of them, were first steps toward the development of the "wall-veil" or arcaded decoration, and of the campaniles, which in later centuries became so characteristic of north Italian churches (see Chapter XIII). All the earlier churches were built fronting the east; after the sixth century this orientation was reversed.

The basilican form of church became general in Italy, a large proportion of whose churches continued to be built with wooden roofs and with but slight deviations from the original type, long after the appearance of the Gothic style. The chief departures from early precedent were in the exterior, which was embellished with marble incrustations as in S. Miniato (Florence); or with successive stories of wall-arcades, as in many churches in Pisa and Lucca (see Fig. 94); until finally the introduction of clustered piers, pointed arches, and vaulting, gradually transformed the basilican into the Italian Romanesque and Gothic styles.

SYRIA AND THE EAST. In Syria, particularly the central portion, the Christian architecture of the third to seventh centuries produced a number of very interesting monuments. The churches built by Constantine in Syria—the Church of the Nativity in Bethlehem (nominally built by his mother), of the Ascension at Jerusalem, the magnificent octagonal church on the site of the Temple, and finally the somewhat similar church at Antioch—were the most notable Christian monuments in Syria. The first three on the list, still extant in part at least, have been so altered by later additions and restorations that their original forms are only approximately known from early descriptions. They were all of large size, and the octagonal church on the Temple platform was of exceptional magnificence. The columns and a part of the marble incrustations of the early design are still visible in the "Mosque of Omar," but most of the old work is concealed by the decoration of tiles applied by the Moslems, and the whole interior aspect altered by the wood-and-plaster dome with which they replaced the simpler roof of the original.

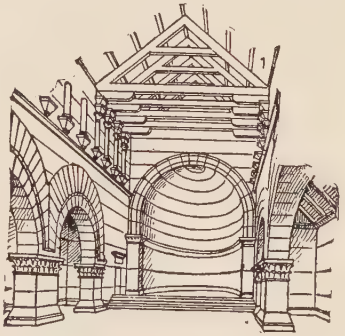


FIG. 69.—CHURCH AT KALB LOUZEH.

Christian architecture in Syria soon, however, diverged from Roman traditions. The abundance of hard stone, the total lack of clay or brick, the remoteness from Rome, led to a peculiar independence and originality in the forms and details of the ecclesiastical as well as of the domestic architecture of central Syria. These innovations upon Roman models resulted in the development of distinct types which, but for the arrest of progress by the Mohammedan conquest in the seventh cen-

tury, would doubtless have inaugurated a new and independent style of architecture. Piers of masonry came to replace the classic column, as at Tafkha (third or fourth century), Rouheiha and Kalb Louzeh (fifth century? Fig. 69); the ceilings in the smaller churches were often formed with stone slabs; the apse was at first confined within the main rectangle of the plan, and was sometimes square. The exterior assumed a striking and picturesque variety of forms by means of turrets, porches, and gables. Singularly enough, vaulting hardly appears at all, though the arch is used with fine effect. Conventual and monastic groups of buildings appear early in Syria, and that of **St. Simeon Stylites** at Kelat Seman is an impressive and interesting monument. Four three-aisled wings form the arms of a cross, meeting in a central octagonal open court, in the midst of which stood the column of the saint. The eastern arm of the cross forms a complete basilica of itself, and the whole cross measures 330 × 300 feet. Chapels, cloisters, and cells adjoin the main edifice.

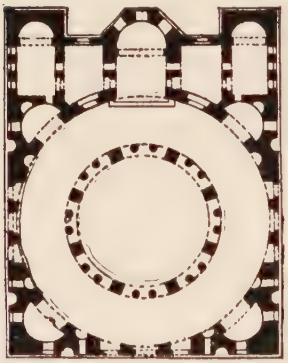


FIG. 70.—CATHEDRAL AT BOZRAH.

Circular and polygonal plans appear in a number of Syrian examples of the early sixth century. Their most striking feature is the inscribing of the circle or polygon in a square which forms the exterior outline, and the use of four niches to fill out the corners. This occurs at Kelat Seman in a small double church, perhaps the tomb and chapel of a martyr; in the cathedral at **Bozrah** (Fig. 70), and in the small domical church of **St. George** at **Ezra**. These were probably the prototypes of many Byzantine churches like St. Sergius at Constantinople, and San Vitale at Ravenna (Fig.

74), though the exact dates of the Syrian churches are not known. The one at Ezra is the only one of the three which has a dome, the others having been roofed with wood.

The interesting domestic architecture of this period is preserved in whole towns and villages in the Hauran, which, deserted at the Arab conquest, have never been reoccupied and remain almost intact but for the decay of their wooden roofs. They are marked by dignity and simplicity of design, and by the same picturesque massing of gables and roofs and porches which has already been remarked of the churches. The arches are broad, the columns rather heavy, the mouldings few and simple, and the scanty carving vigorous and effective, often strongly Byzantine in type.

Elsewhere in the Eastern world are many early churches of which even the enumeration would exceed the limits of this work. Salonica counts a number of basilicas and several domical churches. The basilica of **St. Demetrius,** of noble proportions and richly decorated, was reduced to a ruin by the fire of 1917. The church of **St. George** is of early date and thoroughly Roman in plan and section, of the same class with the Pantheon and the tomb of Helena, in both of which a massive circular wall is lightened by eight niches. At Angora (Ancyra), Hierapolis, Pergamus, and other points in Asia Minor; in Egypt, Nubia, and Algiers, are many examples of both circular and basilican edifices of the early centuries of Christianity. In Constantinople there remains but a single representative of the basilican type, the church of **St. John Studius** (the Emir Akhor mosque), now in ruinous decay.

MONUMENTS. ROME: 4th century; St. Peter's, Sta. Costanza, 330?; Baptistery of St. John Lateran, 330; Sta. Pudentiana, 335 (rebuilt 1598); tomb of St. Helena; St. Paul beyond the Walls, 386 (burned 1823, rebuilt late 19th century); St. John Lateran (wholly remodelled in modern times). 5th century: Sta. Sabina, 425; Sta. Maria Maggiore, 432; S. Pietro in Vincoli, 442 (greatly

altered in modern times); San Stefano Rotondo, 6th century; S. Lorenzo, 580 (the older portion in two stories); SS. Cosmo e Damiano. 7th century: Sta. Agnese, 625; S. Giorgio in Velabro, 682. 8th century: Sta. Maria in Cosmedin; S. Crisogono. 9th century: S. Nereo ed Archilleo; Sta. Prassede; Sta. Maria in Dominica. 12th and 13th centuries: S. Clemente, 1108; Sta. Maria in Trastevere; S. Lorenzo (nave); Sta. Maria in Ara Coeli. RAVENNA: Baptistery of S. John, 400 (?); S. Francesco; S. Giovanni Evangelista, 425; Sta. Agata, 430; S. Giovanni Battista, 439; tomb of Galla Placidia, 450; S. Apollinare Nuovo, 500-520; S. Apollinare in Classe, 538; St. Victor; Sta. Maria in Cosmedin (the Arian Baptistery); tomb of Theodoric (Sta. Maria della Rotonda, a decagonal two-storied mausoleum, with a low dome cut from a single stone 36 feet in diameter), 530-540. ITALY IN GENERAL, including ISTRIA: basilicas at Parenzo, 540 and Pola (Istria); at Grado, 580; cathedral and Sta. Fosca at Torcello, 640-700; at Naples, Sta. Restituta (remains incorporated into a chapel of cathedral); others, mostly of 10th-13th centuries, at Murano near Venice, at Florence (S. Miniato), Spoleto, etc.; baptisteries at Asti, Florence, Nocera dei Pagani, and other places. In SYRIA AND THE EAST: basilicas of the Nativity at Bethlehem, of the Sepulchre and of the Ascension at Jerusalem; also polygonal church on Temple platform; these all of the 4th century. Basilicas at Bakouzah, Hass, Kelat Seman, Kalb Louzeh, Rouheiha, Tourmanin, etc.; circular churches, tombs, and baptisteries at Bozrah, Ezra, Hass, Kelat Seman, Rouheiha, etc.; all these 4th-8th centuries. Golden church at Antioch, 6th century. Churches at Constantinople (Holy Wisdom, St. John Studius, etc.), Hierapolis, Pergamus, and Thessalonica (St. Demetrius, St. George, "Eski Djuma"); in Egypt and Nubia (Djemla, Announa, Ibreem, Siout, etc.); at Orléansville in Algeria. (For churches, etc., of the 8th-10th centuries in the West, see Chapter XIII.)

CHAPTER XI

BYZANTINE ARCHITECTURE

BOOKS RECOMMENDED: As before, Essenwein, Hübsch. Also, Choisy, *L'Art de bâtir chez les Byzantins.* Couchaud, *Choix d'églises byzantines en Grèce.* Diehl, *Manuel d'art byzantin.* Gayet, *L'Art byzantin d'après les monuments en Italie.* Jackson, *Byzantine and Romanesque Architecture.* Lethaby and Swainson, *Sancta Sophia.* Millet, *L'Ancien art serbe: les églises.* Ongania, *La Basilica di San Marco.* Salzenberg, *Altchristliche Baudenkmale von Constantinopel.* Strzygowski, *Die Baukunst der Armenien.* Texier and Pullan, *Byzantine Architecture.* Van Millingen, *Byzantine Churches of Constantinople.*

ORIGIN AND CHARACTER. The decline and fall of Rome arrested the development of the basilican style in the West, as did the Arab conquest later in Syria. It was otherwise in the new Eastern capital founded by Constantine in the ancient Byzantium, which was rising in power and wealth while Rome lay in ruins. Situated at the strategic point of the natural highway of commerce between East and West, salubrious and enchantingly beautiful in its surroundings, the new capital grew rapidly from provincial insignificance to metropolitan importance. Its founder had embellished it with an extraordinary wealth of buildings, in which, owing to the scarcity of trained architects, quantity and cost doubtless outran quality. But at least the tameness of blindly followed precedent was avoided, and this departure from traditional tenets contributed undoubtedly to the originality of Byzantine architecture. The artisans employed in building were largely of

Greek race, from Asia Minor and the Ægean Islands. Others came from Syria, and the early Christian art of Syria strongly influenced the Byzantine. An Oriental taste for brilliant and harmonious color and for minute decoration spread over broad surfaces must have been stimulated by trade with the East. An Asiatic origin may also be assigned to the methods of vaulting employed, which were far more varied than the Roman. From Roman architecture, however, the Byzantines borrowed the fundamental notion of their structural art; that, namely, of distributing the weights and strains of their vaulted structures upon isolated and massive points of support, strengthened by deep buttresses, internal or external, as the case might be. Roman, likewise, was the use of polished monolithic columns, and the incrustation of the piers and walls with panels of variegated marble, as well as the decoration of plastered surfaces by fresco and mosaic, and the use of *opus sectile* and *opus Alexandrinum* for the production of sumptuous marble pavements. In the first of these processes the color-figures of the pattern are formed each of a single piece of marble cut to the shape required; in the second the pattern is compounded of minute squares, triangles, and curved pieces of uniform size. Under these combined influences the artists of Constantinople wrought out new problems in construction and decoration, giving to all that they touched a new and striking character.

There is no absolute line of demarcation, chronological, geographical, or structural, between Early Christian and Byzantine architecture. But the former was especially characterized by the basilica with three or five aisles, and the use of wooden roofs even in its circular edifices; the vault being exceedingly rare, and the dome used only for small circular tombs and baptisteries. Byzantine architecture, on the other hand, rarely produced the simple three-aisled or five-aisled basilica. Nearly all its monuments were vaulted or domed, or both, and Byzantine architecture achieved its highest triumphs in the use of

the *pendentive,* as the triangular spherical surfaces are called by the aid of which a dome can be supported on the summits of four arches spanning the four sides of a square, as explained later. There is as little uniformity in the plans of Byzantine buildings as in the forms of the vaulting. A few types of church-plan, however, predominated locally in one or another centre; but the controlling feature of the style was the dome and the constructive system with which it was associated. The dome, it is true, had long been used by the Romans, but generally on a circular plan, as in the Pantheon.* It is also a fact that pendentives have been found in Syria and Asia Minor older than the oldest Byzantine examples. But the special feature characterizing the Byzantine dome on pendentives was its almost exclusive association with plans having piers and columns or aisles, with the dome as the central and dominant feature of the complex design (see plans, Figs. 74, 75, 76, 79). Another strictly Byzantine practice was the piercing of the lower portion of the dome with windows forming a circle or crown, and the final development of this feature into a high drum.

CONSTRUCTION. Still another divergence from Roman methods was in the substitution of brick and stone masonry for concrete. Brick was used for the mass as well as the facing of walls and piers, and for the vaulting in many buildings mainly built of stone. Stone was used either alone or in combination with brick, the latter appearing in bands of four or five courses at intervals of three or four feet. In later work a regular alternation of the two materials, course for course, was not uncommon. In piers intended to support unusually heavy loads the stone was very carefully cut and fitted, and sometimes tied and clamped with iron.

Vaults were built sometimes of brick, sometimes of cut

* With the exception of the Baths of Gallienus ("Minerva Medica"), 268 A.D., and chambers in the Baths of Caracalla and on the Palatine hill.

stone; in a few cases even of earthenware jars fitting into each other, and laid up in a continuous contracting spiral from the base to the crown of a dome, as in San Vitale at Ravenna. Ingenious processes for building vaults without centrings were made use of—processes inherited from the drain-builders of ancient Assyria, and still in vogue in Armenia, Persia, and Asia Minor. The groined vault was common, but always approximated the form of a dome, by a longitudinal convexity upward in the intersecting vaults. The aisles of Hagia Sophia* display a remarkable variety of forms in the vaulting.

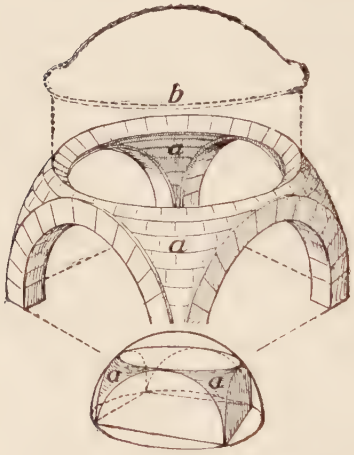


FIG. 71.—DIAGRAM OF PENDENTIVES.

DOMES. The dome, as we have seen, early became the most characteristic feature of Byzantine architecture; and especially the dome on pendentives. If a hemisphere be cut by five planes, four perpendicular to its base and bounding a square inscribed therein, and the fifth plane parallel to the base and tangent to the semicircular intersections made by the first four, there will remain of the original surface only four triangular spaces bounded by arcs of circles. These are called *pendentives* (Fig. 71 *a*). When these are built up of masonry, each course forms a species of arch, by virtue of its convexity. At the crown of the four arches on

* "St. Sophia," the common name of this church, is a misnomer. It was not dedicated to a saint at all, but to the Divine Wisdom (Hagia Sophia), which name the Turks have retained in the softened form "Aya Sofia."

which they rest, these courses meet and form a complete circle, perfectly stable and capable of sustaining any superstructure that does not by excessive weight disrupt the whole fabric by overthrowing the four arches which support it. Upon these pendentives, then, a new dome may be started of any desired curvature, or even a cylindrical drum to support a still loftier dome, as in the later churches (Fig. 71 *b*). This method of covering a square is simpler than the groined vault, having no sharp edges or intersections; it is at least as effective architecturally, by reason of its greater height in the centre; and is equally applicable to successive bays of an oblong, cruciform, and even columnar building. In the great cisterns at Constantinople vast areas are covered by rows of small domes supported on ranges of columns.

The earlier domes were commonly pierced with windows at the base, this apparent weakening of the vault being compensated for by strongly buttressing the piers between the windows, as in Hagia Sophia. Here forty windows form a crown of light at the spring of the dome, producing an effect almost as striking as that of the simple *oculus* of the Pantheon, and celebrated by ancient writers in the most extravagant terms. In later and smaller churches a high drum was introduced beneath the dome, in order to secure, by means of longer windows, more light than could be obtained by merely piercing the diminutive domes.

Buttressing was well understood by the Byzantines, whose plans were skilfully devised to provide internal abutments, which were often continued above the roofs of the side-aisles to prop the main vaults, precisely as was done by the Romans in their thermæ and similar halls. But the Byzantines, while adhering less strictly than the Romans to traditional forms and processes, and displaying much more ready contrivance and special adaptation of means to ends, never worked out this pregnant structural principle to its logical conclusion as did

the Gothic architects of Western Europe a few centuries later.

DECORATION. The exteriors of Byzantine buildings (except in many of the small churches of late date) were generally bare and lacking in beauty. The interiors, on the contrary, were richly decorated, color playing a much larger part than carving in the designs. Painting was resorted to only in the smaller buildings, the more durable and splendid medium of mosaic being usually preferred. This was, as a rule, confined to the vaults and to those portions of the wall-surfaces embraced by the vaults above their springing. The colors were brilliant, the background being usually of gold, though sometimes of blue or a delicate green. Biblical scenes, symbolic and allegorical figures and groups of saints adorned the larger areas, particularly the half-dome of the apse, as in the basilicas. The smaller vaults, the soffits of arches, borders of pictures, and other minor surfaces, received a more conventional decoration of crosses, monograms, and set patterns.

FIG. 72.—SPANDRIL. HAGIA SOPHIA.

The walls throughout were sheathed with slabs of rare marble in panels so disposed that the veining should produce symmetrical figures. The panels were framed in billet-mouldings, derived perhaps from classic dentils; the billets or projections on one side the moulding coming opposite the spaces on

the other. This seems to have been a purely Byzantine feature.

CARVED DETAILS. Internally the different stories were marked by horizontal bands and cornices of white or inlaid marble richly carved. The arch-soffits, the archivolts or bands around the arches, and the spandrils between them were covered with minute and intricate incised carving. The motives used, though based on the acanthus and anthemion, were given a wholly new aspect. The relief was low and flat, the leaves sharp and crowded, and the effect rich and lacelike, rather than vigorous. It was, however, well adapted to the covering of large areas where general effect was more important than detail. Even the capitals were treated in the same spirit. The impost-block was almost universal, except where its use was rendered unnecessary by giving to the capital itself the massive pyramidal form required to receive properly the spring of the arch or vault. In such cases (more frequent in Constantinople than elsewhere) the surface of the capital was simply covered with incised carving of foliage, basketwork, monograms, etc.; rudimentary volutes in a few cases recalling classic traditions (Figs. 72, 73). The mouldings were weak and poorly executed, and the vigorous profiles of classic cornices were only

FIG. 73.—CAPITAL WITH IMPOST BLOCK, S. VITALE.

remotely suggested by the characterless aggregations of mouldings which took their place.

PLANS. The remains of Byzantine architecture are almost exclusively of churches and baptisteries, but the plans of these are exceedingly varied. The first radical departure from the basilica-type seems to have been the adoption of circular or polygonal plans, such as had usually served only for tombs and baptisteries. The Baptistery of St. John at Ravenna (early fifth century) is classed by many authorities as a Byzantine monument. In the early years of the sixth century the adoption of this model had become quite general, and with it the development of domical design began to advance. The church of **St. Sergius** at Constantinople (Fig. 74), originally joined to a short basilica dedicated to St. Bacchus (afterward destroyed by the Turks), as in the double church at Kelat Seman, was built about 520; that of **San Vitale** at Ravenna was begun a few years later; both are domical churches on an octagonal plan, with an exterior aisle. Semicircular niches—four in St. Sergius and six in San Vitale—projecting into the aisle, enlarge somewhat the area of the central space and give variety to the internal effect. The origin of this characteristic feature may be traced to the eight niches of the Pantheon, through such intermediate

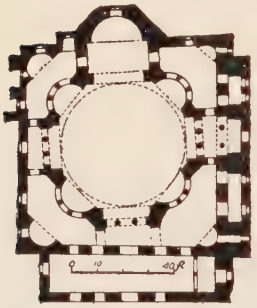


FIG. 74.—ST. SERGIUS, CONSTANTINOPLE.

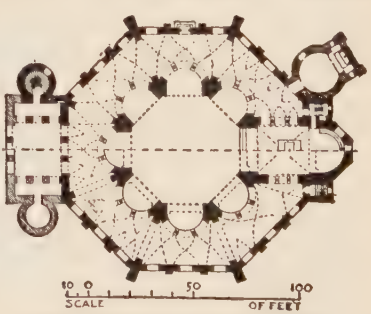


FIG. 75.—PLAN OF S. VITALE, RAVENNA.

examples as the temple of Minerva Medica at Rome.* The true pendentive does not appear in the two churches mentioned above. Timidly employed up to that time in small structures, it received a remarkable development in the magnificent church of **Hagia Sophia,** built by Anthemius of Tralles and Isodorus of Miletus, under Justinian, 532–538 A.D. In the plan of this marvelous edifice (Fig. 76) the dome rests upon four mighty arches bounding a square, into two of which open the half-domes of semicircular apses. These apses are penetrated and extended each by two smaller niches and a central arch, and the whole vast nave, measuring over 240 × 100 feet, is flanked by enormously wide aisles connecting

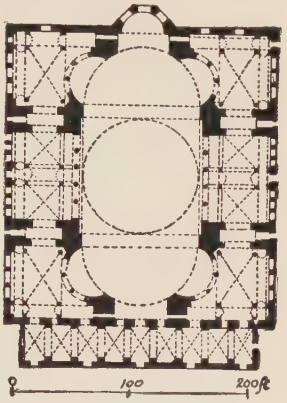


FIG. 76.—PLAN OF HAGIA SOPHIA.

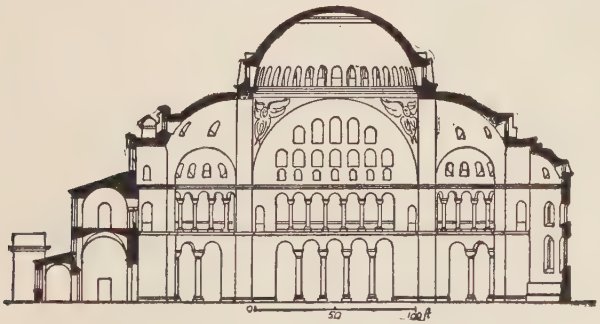


FIG. 77.—SECTION OF HAGIA SOPHIA.

* The churches of St. George at Ezra and the Cathedral of Bozrah, both in Syria (see p. 120 and Figure 70) belong also to this group and time; as also San Lorenzo at Milan, and the adjoining baptistery and Chapel of St. Aquilin.

at the front with a majestic narthex. Huge transverse buttresses, as in the Basilica of Constantine (with whose structural design this building shows striking affinities), divide the aisles each into three sections. The plan suggests that of St. Sergius cut in two, with a lofty dome on pendentives over a square plan inserted between the halves. Thus was secured a noble and unobstructed hall of unrivalled beauty, covered by a combination of half-domes increasing in span and height as they lead up successively to the stupendous central vault, which rises 180 feet into the air and fitly crowns the whole. The imposing effect of this low-curved but loftily poised dome, resting upon a crown of windows, its summit visible from every point of the nave (as may be easily seen from an examination of the section, Fig. 77), is not surpassed in any interior ever erected.

The two lateral arches under the dome are filled by clear-story walls pierced by twelve windows, and resting on arcades in two stories carried by magnificent columns taken from ancient ruins. These separate the nave from the two-storied side-aisles, which are vaulted with a remarkable variety of groined vaults. All the masses are disposed with studied reference to the complex thrusts exerted by the dome and other vaults. That the earthquakes of nearly fourteen centuries have not destroyed the church is the best evidence of the sufficiency of these precautions.

Not less remarkable than the noble planning and construction of this church was the treatment of scale and decoration in its interior design. It is as conspicuously the masterpiece of Byzantine architecture as the Parthenon was of the classic Greek. With little external beauty, it is internally one of the most perfectly composed and beautifully decorated halls of worship ever erected. Instead of the simplicity of the Pantheon it displays the complexity of an organism of admirably related parts. The division of the interior height into two

FIG. 78.—INTERIOR OF HAGIA SOPHIA, CONSTANTINOPLE.

stories below the spring of the four arches reduces the component parts of the design to moderate dimensions, so that the scale of the whole is more easily grasped and its vast size emphasized by the contrast. The walls are incrusted with precious marbles up to the spring of the vaulting; the capitals, spandrils, and soffits are richly and minutely carved with incised ornament, and all the vaults covered with splendid mosaics. Dimmed by the lapse of centuries and disfigured by the vandalism of the Moslems, this noble interior, by the harmony of its coloring and its impressive grandeur, is one of the masterpieces of all time (Fig. 78).

LATER CHURCHES. After the sixth century no monuments were built at all rivaling in scale the creations of the former period. The later churches were, with few exceptions, relatively small and trivial. Neither the plan nor the general aspect of Hagia Sophia seems to have been imitated in these later works. The crown of dome-windows was replaced by a cylindrical drum under the dome, which was usually of insignificant size. The exterior was treated more decoratively than before, by means of bands and incrustations of colored marble, or alternations of stone and brick; and internally mosaic continued to be executed with great skill. The Iconoclastic controversy of the eighth century interrupted the architectural activity of Constantinople for over a century; but in Greece, Macedonia and Asia Minor the building of domed churches and monasteries continued, while in Armenia a new and original development of the style was in progress. In the tenth century there began a revival, of which the most noteworthy example is the **Kahrié Djami** (formerly Moné tes Choras), of the twelfth century, with remarkable mosaics in the narthex-vaults. All the later churches were small in scale, the larger ones among them planned as if composed of three small churches side by side, opening into one another.

FOREIGN MONUMENTS. The influence of Byzantine art

was wide-spread, both in Europe and Asia. The leading city of civilization through the Dark Ages, Constantinople influenced Italy through her political and commercial relations with Ravenna, Genoa, and Venice. The church of **St. Mark** in the latter city was one result of this influence (Figs. 79, 80). Begun in 976 to replace an earlier church destroyed by fire, and largely rebuilt between 1047 and 1071, it received through several centuries additions not always Byzantine in character. Yet it was mainly the work of Byzantine builders, who copied the church of the Apostles at Constantinople, built by Justinian. The narthex was not added until the twelfth century. The picturesque but wholly unstructural use of columns in the entrance porches, the upper parts of the façade, the wooden cupolas over the five domes, and the pointed arches in the narthex, are deviations from Byzantine traditions dating in part from the later Middle Ages. Nothing could well be conceived more irrational, from a structural point of view, than the accumulation of columns in the entrance-arches; but the total effect is so picturesque and so rich in color, that its architectural defects are easily overlooked. The external veneering of white and colored marble occurs rarely in the East, but became a favorite practice in Venice, where it continued in use for five hundred years. The interior of St. Mark's, in some respects better preserved than that of Hagia Sophia, is especially fine in color, though not equal in scale and grandeur to the latter church. With its five domes it has less unity of effect than Hagia Sophia, but more of the charm of picturesqueness, and its less brilliant and simpler lighting

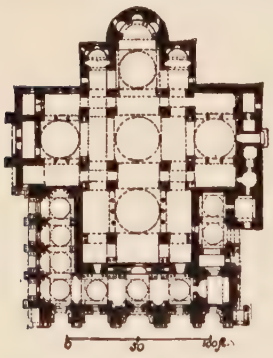


FIG. 79.—PLAN OF ST. MARK'S, VENICE.

enhances the impressiveness of its more modest dimensions. The church of **San Lorenzo** at Milan, though greatly altered in various rebuildings, may be classed as Byzantine in plan, with its octagonal rotunda, four apses, and surrounding aisle.

In Russia, Greece and the Balkan region the Byzantine style

FIG. 80.—INTERIOR OF ST. MARK'S.

has continued to be the official style of the Greek Church. The Russian monuments are for the most part of a somewhat fantastic aspect, the Muscovite taste having introduced many innovations in the form of bulbous domes and other eccentric details. In Greece there are few large churches, and some of the most interesting, like the old Cathedral at Athens, are almost tonlikae in their diminutiveness. On **Mt. Athos** is an ancient monastery which still retains its Byzantine character and traditions. In Armenia (as at Ani, Etchmiadzin, etc.)

are also interesting examples of the Armeno-Byzantine architecture, showing externally polygonal pyramids or cones on high drums covering the internal domes. The façades display in their carved decorations mingled influences both eastern and western, often with elaborate interlaced ornament looking like a re-echo of Celtic MSS. illumination. Serbia abounds in interesting monasteries and churches, built between 1168 and 1450, chiefly Byzantine in style, but in some cases influenced by Lombard and Dalmatian types. The monasteries of Manasija and Marko, and the churches of Studenica, Chilandari, Krusevach and Liubostinja are especially remarkable for the richness of their exteriors. But the greatest and most prolific offspring of Byzantine architecture appeared after the fall of Constantinople (1453) in the new mosque-architecture of the victorious Turks.

MONUMENTS. CONSTANTINOPLE: St. Sergius, 520; Hagia Sophia, 532-538; Holy Apostles by Justinian (demolished); Holy Peace (St. Irene), by Constantine, rebuilt by Justinian, and again in the 8th century by Leo the Isaurian; Hagia Theotokos, 12th century (also called St. Theodore); Moné tes Choras ("Kahiré Djami"), 10th century; Pantokrator; "Fetiyeh Djami." Cisterns, the "Bin Dir Direck" (1,001 columns) and "Yeré Batan Serai"; great hall of the palace of the Porphyrogenitus (Tekfour Serai). SALONICA: Churches of Divine Wisdom ("Aya Sofia"), St. Bardias, St. Elias. RAVENNA: San Vitale, 527-540; part of façade of palace of Theodoric. VENICE: St. Mark's, 1047-15th century; "Fondaco dei Turchi," now Civic Museum, 12th century. MILAN: San Lorenzo, 6th century. Other churches at Athens and Mt. Athos; at Daphni, Misitra, Myra, Ancyra, Ephesus, etc.; Monastery of St. Luke at Stiris; in Cyprus at St. Barnabas, Peristeroma, etc.; in Armenia and Georgia at Ala-Werdi, Ani, Dighour, Etchmiadzin, Kouthais, Muskhet, Pitzounda, Usunlar, etc.; tombs at Ani, Varzhahan, etc.; in Russia at Kieff (St. Basil), Kostroma, Moscow (Assumption, Vasili Blaghennoi, etc.), Novgorod, Tchernigoff; at Kurtea Darghish in Rumania, and many others.

CHAPTER XII

SASSANIAN AND MOHAMMEDAN ARCHITECTURE

(ARABIAN, MORESQUE, PERSIAN, INDIAN, AND TURKISH)

BOOKS RECOMMENDED: Bourgoin, *Les Arts arabes.* Coste, *Monuments du Caire; Monuments modernes de la Perse.* Briggs, *Mohammedan Architecture in Egypt and Palestine.* Fergusson, *Indian and Eastern Architecture.* Flandin et Coste, *Voyage en Perse.* Havell, *Monuments of India.* Franz-Pasha, *Die Baukunst des Islam.* Gayet, *L'Art arabe; L'Art persan.* Girault de Prangey, *Essai sur l'architecture des Arabes en Espagne,* etc. Goury and Jones, *The Alhambra.* Jacob, *Jeypore Portfolio of Architectural Details.* Lane Poole, *Saracenic Art.* Le Bon, *La civilisation des Arabes; Les monuments de l'Inde.* Migeon, *Le Caire* (Series of *Villes d'Art*). Montani, *L'Architecture Ottomane.* Owen Jones, *Grammar of Ornament.* Parvillée, *Architecture et décoration turques.* Prisse d'Avennes, *L'Art arabe.* Saladin et Migeon, *Manuel d'art mussulman.*

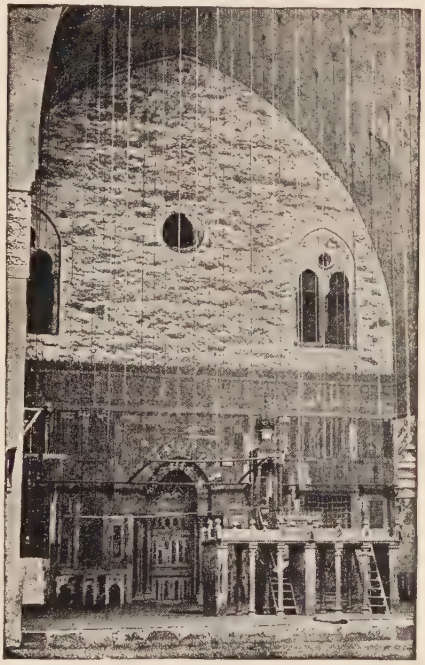
GENERAL SURVEY. While the Byzantine Empire was at its zenith, the new faith of Islam was conquering Western Asia and the Mediterranean lands with a fiery rapidity which is one of the marvels of history. The new architectural styles which grew up in the wake of these conquests, though differing widely in conception and detail in the several countries, were yet marked by common characteristics which set them quite apart from the contemporary Christian styles. The predominance of decorative over structural considerations, a predilection for minute surface-ornament, the absence of pictures and sculpture, are found alike in Arabic, Persian, Turkish, and Indian buildings, though in varying degree. These

new styles, however, were at first almost entirely the handiwork of artisans from the conquered races, and many traces of Byzantine, and even after the Crusades, of Norman and Gothic design, are recognizable in Moslem architecture. But the Orientalism of the conquerors and their common faith, tinged with the poetry and philosophic mysticism of the Arab, stamped these works of Copts, Syrians, and Greeks with an unmistakable character of their own, neither Byzantine nor Early Christian.

ARABIC ARCHITECTURE. In the building of mosques and tombs, especially at Cairo, this architecture reached a remarkable degree of decorative elegance, and sometimes of dignity. It developed slowly, the Arabs not being at the outset a race of builders; the sacred *Kaabah* at Mecca and the original mosque at Medina hardly deserved to be called architectural monuments at all. The most important early works were the mosques of **'Amrou** at Cairo (642, rebuilt and enlarged early in the eighth century), of **El Aksah** on the Temple platform at Jerusalem (691, by Abd-el-Melek), and of **El Walîd** at Damascus (705–732, rebuilt since the fire of 1893). All these were simple one-storied structures, with flat wooden roofs carried on parallel ranges of columns supporting pointed arches, the arcades either closing one side of a square court, or surrounding it completely. The long perspectives of the aisles and the minute decoration of the archivolts and ceilings alone gave them architectural character. The beautiful **Dome of the Rock** (Kubbet-es-Sakhrah, miscalled the Mosque of Omar) on the Temple platform at Jerusalem possibly recalls a Constantinian edifice, though its present form is that given by Soliman the Magnificent in 1520–66, preserving the original plan but with decorations of the restorer's time. Its plan resembles that of San Stefano Rotondo at Rome, and is clearly of Christian origin (see p. 119).

The splendid mosque of **Ibn Touloun** (876–885) was built

on the same plan as that of Amrou, but with cantoned piers instead of columns and a corresponding increase in variety of perspective and richness of effect. With the incoming of the Fatimite dynasty, however, and the foundation of the present city of Cairo (971), vaulting began to take the place of wooden ceilings, and then appeared the germs of those extraordinary applications of geometry to decorative design which were henceforth to be the most striking feature of Arabic ornament. Under the Ayûb dynasty, which began with Salâh-eddin (Saladin) in 1172, these elements developed slowly in the domical tombs of the *Karafah* at Cairo, and prepared the way for the increasing richness and splendor of a long series of mosques, among which those of **Kalaoun** (1284–1318), **Sultan Hassan** (1356), **El Mu'ayyad** (1415), and **Kaît Bey** (1463), were the most conspicuous examples (Fig. 81). They mark, indeed, successive advances in complexity of planning, ingenuity of construction, and elegance of decoration. Together they constitute an epoch



a *b*

FIG. 81.—MOSQUE OF SULTAN HASSAN, CAIRO: SANCTUARY.
a, Mihrab; b, Mimber.

in Arabic architecture, which coincides closely with the development of Gothic vaulted architecture in Europe, both in the stages and the duration of its advances.

The larger mosques of these three centuries are, like the mediæval monasteries, complex groups of buildings of various sorts about a central court of ablutions. The tomb of the founder, residences for the *imams*, or priests, schools (*medresseh*), and hospitals (*mâristân*) rival in importance the prayer-chamber. This last is, however, the real focus of interest and splendor; in some cases, as in Sultan Hassan, it is a simple barrel-vaulted chamber open to the court; in others an oblong arcaded hall; or (after 1517) a square hall covered with a dome on pendentives. The ceremonial requirements of the mosque were simple. The court must have its fountain of ablutions in the centre. The prayer-hall, or mosque proper, must have its *mihrâb*, or niche, to indicate the *kibleh*, the direction of Mecca, toward which every worshipper must face while praying; and its *mimber*, or high, slender pulpit for the reading of the Koran. These were the only absolutely indispensable features of a mosque, but as early as the ninth century the *minaret* was added, from which the call to prayer could be sounded over the city by the *mueddin*. Not until the Ayubite period, however, did the minaret begin to assume those forms of varied and picturesque grace which lend to Cairo so much of its architectural charm.

ARCHITECTURAL DETAILS. While Arabic architecture, in Syria and Egypt alike, possesses more decorative than constructive originality, the beautiful forms of its domes, pendentives, and minarets, the simple majesty of the great pointed barrel-vaults of the Hassan mosque and similar monuments, and the graceful lines of the universally used pointed arch, prove the Coptic builders and their later Arabic successors to have been architects of great ability. The Arabic domes, as seen both in the mosques and in the remarkable group of

tombs commonly called "tombs of the Khalifs," are peculiar not only in their pointed outlines and their rich external decoration of interlaced geometric motives, but still more in the external and internal treatment of the pendentives, exquisitely decorated with stalactite ornament. This ornament, derived, apparently, from a combination of minute corbels with rows of small niches, and presumably of Persian origin, was finally developed into a system of extraordinary intricacy, applicable alike to the topping of a niche or panel, as in the great doorways of the mosques, and to the bracketing out of minaret galleries (Figs. 82, 83). Its applications show a bewildering variety of forms and an extraordinary aptitude for intricate geometrical design.

FIG. 82.—MOSQUE OF KAÎT BEY, CAIRO.

DECORATION. Geometry, indeed, vied with the love of color in its hold on the Arabic taste. Ceiling-beams were carved into highly ornamental forms before receiving their rich color-decoration of red, green, blue, and gold. The doors and the *mimber* were framed in geometric patterns with slender intersecting bars forming complicated star-paneling. The voussoirs of arches were cut into curious interlocking forms; doorways and niches were capped with stalactite cor-

beling, and pavements and wall-incrustations, whether of marble or tiling, combined brilliancy and harmony of color with the perplexing beauty of interlaced star-and-polygon patterns of marvellous intricacy. Stained glass added to the interior color-effect, the patterns being perforated in plaster, with a bit of colored glass set into each perforation—a device not very durable, perhaps, but singularly decorative.

OTHER WORKS. Few of the mediæval Arabic palaces have remained to our time. That they were adorned with a splendid prodigality appears from contemporary accounts. This splendor was internal rather than external; the palace, like all the larger and richer dwellings in the East, surrounded one or more courts, and presented externally an almost unbroken wall. The fountain in the chief court, the *diwân* (a great, vaulted reception-chamber opening upon the court and raised slightly above it), the *dâr*, or men's court, rigidly separated from the *hareem* for the women, were and are universal elements in these great dwellings. The more common city-houses show as their most striking features successively corbelled-out stories and broad wooden eaves with lattice-screens covering single windows, or almost a whole façade, composed of spindle work (*mousharabiyé*), in designs of great beauty.

The fountains, gates, and minor works of the Arabs display the same beauty in decoration and color, the same general forms and details which characterize the larger works, but it is impossible here to particularize further with regard to them.

MORESQUE. Elsewhere in Northern Africa the Arabs produced important works in less abundance than in Egypt, and these are not so well preserved nor so well known. Constructive design would appear to have been there even more completely subordinated to decoration; tiling and plaster-relief took the place of more architectural elements and materials, while horseshoe and cusped arches were substituted for the

simpler and more architectural pointed arch (Fig. 84). The dome never found favor in North Africa, the great mosques of Kairouân, Tlemcen, Sfax, and Algiers showing the primitive plan of Ibn Touloun, with occasional small domes over the centre or at the ends. The courts of palaces and public buildings were surrounded by ranges of horseshoe arches on slender columns; these last being provided with capitals of a form rarely seen in Cairo. It is noteworthy that the decoration of these mosques and palaces is less elaborate than that of the derived style in Spain. Towers were built of much more massive design than the Cairo minarets, usually with a square, almost solid shaft and a more open lantern at the top, sometimes in several diminishing stories; they are strikingly effective works.

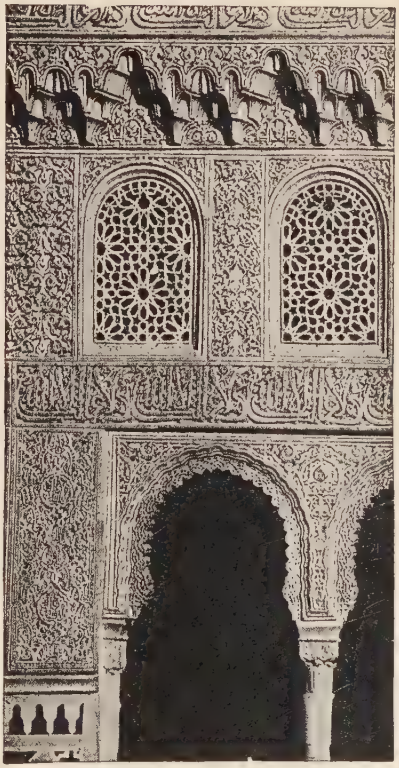


FIG. 83.—MOORISH DETAIL, ALHAMBRA.

Showing stalactite and perforated work, Moorish cusped arch, Hispano-Moresque capitals, and decorative inscriptions.

HISPANO-MORESQUE. The most ornate phase of this branch of Arabic architecture is found not in Africa but in

Spain, which was overrun in 710–713 by the Moors, who established there the independent Khalifate of Cordova. This was later split up into petty kingdoms, of which the most important were Granada, Seville, Toledo, and Valencia. This dismemberment of the Khalifate led in time to the loss of these cities, which were one by one recovered by the Christians during the fourteenth and fifteenth centuries; the capture of Granada, in 1492, finally destroying the Moorish rule.

FIG. 84.—INTERIOR OF THE GREAT MOSQUE AT CORDOVA.

The dominion of the Moors in Spain was marked by a high civilization and an extraordinary activity in building. The style they introduced became the national style in the regions they occupied, and even after the expulsion of the Moors was used in buildings erected by Christians and by Jews. The "House of Pilate," at Seville, is an example of this, and the general use of the Moorish style in Jewish synagogues, down to our own day, both in Spain and abroad, originated in the erection of synagogues for the Jews in Spain by Moorish artisans and in Moorish style, both during and after the period of Moslem supremacy.

Besides innumerable mosques, castles, bridges, aqueducts, gates, and fountains, the Moors erected several monuments

of remarkable size and magnificence. Specially worthy of notice among them are the Great Mosque at Cordova, the Alcazars of Seville and Malaga, the Giralda at Seville, and the Alhambra at Granada.

The **Mosque at Cordova,** begun in 786 by 'Abd-er-Rahman, enlarged in 876, and again by El Mansour in 976, is a vast arcaded hall 375 feet × 420 feet in extent, but only 30 feet high (Fig. 84). The rich wooden ceiling rests upon seventeen rows of thirty to thirty-three columns each, and two intersecting rows of piers, all carrying horseshoe arches in two superposed ranges, a large portion of those about the sanctuary being cusped, the others plain, except for the alternation of color in the voussoirs. The *mihrab* niche is particularly rich in its minutely carved incrustations and mosaics, and a dome ingeniously formed by intersecting ribs covers the sanctuary before it. This form of dome occurs frequently in Spain.

The **Alcazars** at Seville and Malaga, which have been restored in recent years, present to-day a fairly correct counterpart of the castle-palaces of the thirteenth century. They display the same general conceptions and decorative features as the Alhambra, which they antedate. The **Giralda** at Seville is, on the other hand, unique among Spanish monuments, though resembling many Moroccan towers. It is a lofty rectangular tower, its exterior panelled and covered with a species of quarry-ornament in relief; it terminated originally in two or three diminishing stages or lanterns, which were replaced in the sixteenth century by the present Renaissance belfry.

The **Alhambra** is universally considered to be the masterpiece of Hispano-Moresque art, partly no doubt on account of its excellent preservation. It is most interesting as an example of the splendid citadel-palaces built by the Moorish conquerors, as well as for its gorgeous color-decoration of minute quarry-ornament stamped or moulded in the wet plaster wherever the walls are not wainscoted with tiles. It was begun in 1248

by Mohammed-ben-Al-Hamar, enlarged in 1279 by his successor, and again in 1306, when its mosque was built. Its plan (Fig. 85) shows two large courts and a smaller one next the mosque, with three great square chambers and many of minor importance. Light arcades surround the Court of the Lions with its fountain, and adorn the ends of the other chief court; and the stalactite pendentive, rare in Moorish work, appears in the "Hall of Ambassadors" and some other parts of the edifice. But its chief glory is its ornamentation, less durable, less architectural than that of the Cairene buildings, but making up for this in delicacy and richness. Minute vine-patterns and Arabic inscriptions are interwoven with waving intersecting lines, forming a netlike framework, to all of which deep red, blue, black, and gold give an indescribable richness of effect.

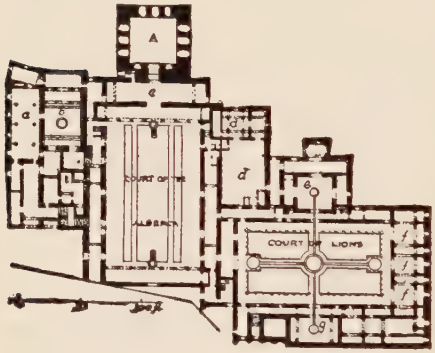


FIG. 85.—PLAN OF THE ALHAMBRA.

A, Hall of Ambassadors; a, Mosque; b, Court of Mosque; c, Sala della Barca; d, d, Baths; e, Hall of the Two Sisters; f, f, f, Hall of the Tribunal; g, Hall of the Abencerrages.

The Moors also overran Sicily in the ninth century, but while their architecture there profoundly influenced that of the Christians who, after recovering Sicily in 1090, copied the style of the conquered Moslems, the only examples of the original Moorish architecture sufficiently important to claim mention in so brief a notice are the two buildings called la Ziza and la Cuba, small Moorish palaces at Palermo remodelled in the twelfth century by the Norman counts.

SASSANIAN. The Sassanian empire, which during the four centuries from 226 to 641 A.D. had withstood Rome and extended its own sway almost to India, left on Persian soil a number of interesting monuments which powerfully influenced the Mohammedan style of that region. The Sassanian buildings appear to have been principally palaces, and were all vaulted. With their long barrel-vaulted halls, combined with square domical chambers, as in Firouz-Abad and Serbistan, they exhibit reminiscences of antique Assyrian tradition. The ancient Persian use of columns was almost entirely abandoned, but doors and windows were still treated with the banded frames and cavetto-cornices of Persepolis and Susa. The Sassanians employed with these exterior details others derived perhaps from Syrian and Byzantine sources. A sort of engaged buttress-column and blind arches repeated somewhat aimlessly over a whole façade were characteristic features; still more so the huge arches, elliptical or horseshoe shaped, which formed the entrances to these palaces, as in the Tâk-Kesra at Ctesiphon, and from which Moorish architecture perhaps derived its preference for the horseshoe arch. Ornamental details of a debased Roman type appear, mingled with more gracefully flowing leaf-patterns resembling early Christian Syrian carving. The last great monument of this style was the palace at Mashita in Moab, begun by the last Chosroes (627), but never finished, an imposing and richly ornamental structure about 500 × 170 feet, occupying the centre of a great court.

PERSIAN-MOSLEM ARCHITECTURE. These Sassanian palaces must have strongly influenced Persian architecture after the Arab conquest in 641. For although the architecture of the first six centuries after that date suffered almost absolute extinction at the hands of the Mongols under Genghis Khan, the traces of Sassanian influence are still perceptible in the monuments that rose in the following centuries. The dome

and vault, the colossal portal-arches, and the use of brick and tile are evidences of this influence, bearing no resemblance to Byzantine or Arabic types. The Moslem monuments of Persia proper, so far as their dates can be ascertained, are all subsequent to 1200, except a number of ruined tombs, some of them near Bagdad with singular pyramidal roofs. The ruined mosque at Tabriz (1300) and the beautiful domical **Tomb** at **Sultaniyeh** (1313) belong to the Mogul period. They show all the essential features of the later architecture of the Sufis (1499–1694), during whose dynastic period were built the still more splendid and more celebrated **Meidan** or square, the great mosque of Mesjid Shah, the Bazaar and the College or Medress of Hussein Shah, all at Ispahan, and many other important monuments at Ispahan, Bagdad, and Teheran. In these structures four elements especially claim attention; the pointed bulbous dome, the round minaret, the portal-arch rising above the adjacent portions of the building, and the use of enamelled terra-cotta tiles as an external decoration. To these may be added the ogee arch (*ogee* = double-reversed curve), as an occasional feature. The vaulting is most ingenious and beautiful, and its forms, whether executed in brick or in plaster, are sufficiently varied without resort to the perplexing complications of stalactite work, although the stalactite is freely used in interior decoration. In Persian decoration the most striking qualities are the harmony of blended color, broken up into minute patterns and more subdued in tone than in the Hispano-Moresque, and the preference of flowing lines and floral ornament to the geometric puzzles of Arabic design. Persian architecture influenced both Turkish and Indo-Moslem art, which owe to it a large part of their decorative charm.

Persian architecture is by no means confined to modern Persia; some of its most striking productions are to be seen in Bagdad, Mosul, Bokhara, Merv, and Samarkhand.

INDO-MOSLEM. The Mohammedan architecture of India is so distinct from all the native Indian styles and so related to the art of Persia, if not to that of the Arabs, that it properly belongs here rather than in the later chapter on Oriental styles. It was in the eleventh century that the states of India first began to fall before Mohammedan invaders, but not until the end of the fifteenth century that the great Mogul dynasty was established in Hindostan as the dominant power. During the intervening period local schools of Moslem architecture were developing in the Pathan country of Northern India (1193–1554), in Jaunpore and Gujerat (1396–1572), in Scinde, where Persian influence predominated; in Kalburgah and Bidar (1347–1426). These schools differed considerably in spirit and detail, and display many distinctively Hindu features; but under the Moguls (1494-1706) there was less diversity, and to this dynasty we owe many of the most magnificent mosques and tombs of India, among which those of Bijapur retain a marked and distinct style of their own.

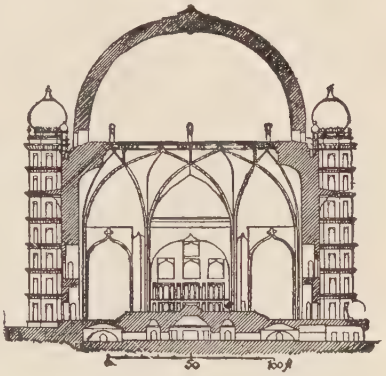


FIG. 86.—TOMB OF MAHMÛD, BIJAPUR. SECTION.

The Mohammedan monuments of India are characterized by a grandeur and amplitude of disposition, a symmetry and monumental dignity of design which distinguish them widely from the picturesque but sometimes trivial buildings of the Arabs and Moors. Less dependent on color than the Moorish or Persian structures, they are usually built of marble, or of marble and sandstone, giving them an air of permanence and

solidity wanting in other Moslem styles except the Turkish. The dome, the round minaret, the pointed arch, and the colossal portal-arch are universal, as in Persia, and enamelled tiles are also used, but chiefly for interior decoration. Externally the more dignified if less resplendent decoration of surface carving is used, in patterns of minute and graceful scrolls, leaf forms, and Arabic inscriptions covering large surfaces. The Arabic stalactite pendentive, star-paneling and geometrical interlace are less frequent. The dome on the square plan is common, but neither the Byzantine nor the Arabic pendentive is used, striking and original combinations of vaulting surfaces, of corner squinches, of corbeling and ribs, being used in its place. Many of the Pathan domes and arches at Delhi, Ajmir, Ahmedabad, Shepree, etc., are built in horizontal or corbelled courses supported on slender columns, and exert no thrust at all, so that they are vaults only in form, like the dome of the Tholos of Atreus (Fig. 24). The most imposing and original of all Indian domes are those of the **Jumma Musjid** and of the **Tomb of Mahmûd,** both at Bijapur, the latter 137 feet in span (Fig. 86). These two monuments, indeed, with the Mogul Taj Mahal at Agra, not only deserve the first rank among Indian monuments, but in constructive science combined with noble proportions and exquisite beauty are hardly, if at all, surpassed by the greatest triumphs of western art. The Indo-Moslem architects, moreover, especially those of the Mogul period, excelled in providing artistic settings for their monuments. Immense platforms, superb courts, imposing flights of steps, noble gateways, minarets to mark the angles of enclosures, and landscape gardening of a high order, enhance greatly the effect of the great mosques, tombs, and palaces of Agra, Delhi, Futtehpore Sikhri, Allahabad, Secundra, etc.

The most notable monuments of the Moguls are the **Mosque of Akbar** (1556–1605) at Futtehpore Sikhri, the tomb of that

sultan at Secundra, and his palace at Allahabad; the **Pearl Mosque** at Agra and the **Jumma Musjid** at Delhi, one of the largest and noblest of Indian mosques, both built by Shah Jehan about 1650; his immense palace group in the same city; and finally the unrivalled mausoleum, the **Taj Mahal** at Agra,

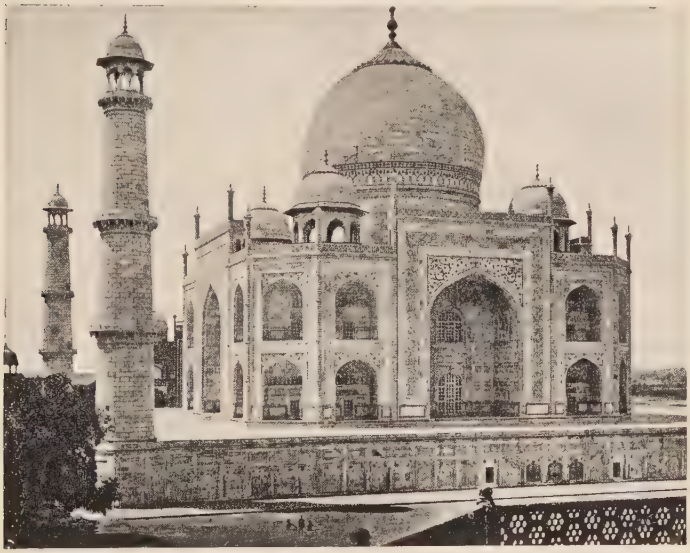


FIG. 87.—TAJ MAHAL, AGRA.

built during his lifetime as a festal hall, to serve as the tomb of his beloved queen Mumtaz-i-Mahal after her death (Fig 87). This last is the pearl of Indian architecture (erroneously said to have been designed by a European architect, French or Italian). It is a white marble structure 185 feet square, centered in a court 313 feet square, forming a platform 18 feet high. The corners of this court are marked by elegant minarets, and the whole is dominated by the exquisite white marble dome 58 feet in diameter, 80 feet high, internally rising over

four domical corner chapels, and covered externally by a lofty marble bulb-dome on a high drum. The rich materials, beautiful execution, and exquisite inlaying of this mausoleum are worthy of its majestic design. In the splendid palace groups at Agra and Delhi (the latter in ruinous decay), the tomb of Akbar at Secundra, in the Mausoleum of Humayûn, and in the monuments mentioned above, Mohammedan art reached its highest expression, from which its later monuments show a rapid decline in originality and renfiement.

TURKISH. Turkish art begins with the establishment of the Seljûk Sultanate of Iconium in Asia Minor in the twelfth century. The mosques and khans erected in this period at Konieh (Iconium) and Sivas are all in ruins, but exhibit a splendid wealth of design in stone, borrowing largely but not wholly from Persian sources.

In 1299 the Ottoman Turks overran the Seljûk empire, already crushed by the Mongols, and established a new capital in Bithynia under Osman I at Brusa, where they built many mosques and tombs, partly with the help of Persian artists. They had already for a century been occupying the fairest portions of the Byzantine empire when, in 1453, they became masters of Constantinople. Hagia Sophia was at once occupied as their chief mosque, and such of the other churches as were spared were divided between the victors and the vanquished. The conqueror, Mehmet II, at the same time set about the building of a new mosque, entrusting the design to a Byzantine, Christodoulos, whom he directed to reproduce, with some modifications, the design of the "Great Church"—Hagia Sophia. The type thus officially adopted has ever since remained the controlling model of Turkish mosque design, so far, at least, as general plan and constructive principles are concerned. Thus the conquering Turks, educated by a century of study and imitation of Byzantine models in Brusa, Nicomedia, Smyrna, Adrianople, and other cities earlier sub-

jugated, did what the Byzantines had, during nine centuries, failed to do. They grasped the possibilities of the Hagia Sophia type, and developed therefrom a style of architecture of great nobility and dignity. The low-curved dome with its crown of buttressed windows, the plain spherical pendentives, the great apses at each end, covered by half-domes and penetrated by smaller niches, the four massive piers with their projecting buttress-masses extending across the broad lateral aisles, the narthex and the arcaded atrium in front—all these appear in the great Turkish mosques of Constantinople. In the Conqueror's mosque, however, two apses with half-domes replace the lateral galleries and clearstory of Hagia Sophia, making a perfectly quadripartite plan, destitute of the emphasis and significance of a plan drawn on one main axis (Fig. 88). The same treatment occurs in the mosque of Ahmed I, the **Ahmediyeh** (1608; Fig. 89), and the **Yeni Djami** ("New Mosque") at the port (1665). In the mosque of **Osman III** (1755) the reverse change was effected; the mosque has no great apses, four clearstories filling the four arches under the dome, as also in several of the later and smaller mosques. The noble **mosque of Selim** and Soliman at Adrianople carries its dome upon eight piers, with alternate half-domes and clearstories, four of each. The greatest and finest of the Turkish mosques, the **Suleimaniyeh,** built in 1553 by

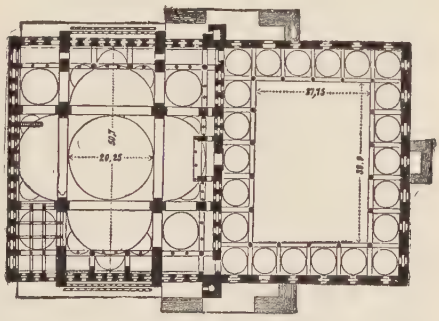


FIG. 88.—MOSQUE OF MEHMET II., CONSTANTINOPLE. PLAN.

(The dimensions figured in metres.)

Soliman the Magnificent, returned to the Byzantine combination of two half-domes and two clearstories (Fig. 90).

In none of these monuments is there the internal magnificence of marble and mosaic of the Byzantine churches. These are only in a measure replaced by Persian tile-wainscoting and stained-glass windows of the Arabic type. The division into

FIG. 89.—EXTERIOR OF AHMEDIYEH MOSQUE.

stories and the treatment of scale are less well managed than in Hagia Sophia; on the other hand, the proportion of height to width is generally admirable. The exterior treatment is unique and effective; the massing of domes and half-domes and roofs is artistically arranged; and while there is little of that minute carved detail found in Egypt and India, the composition of the lateral arcades, the domical peristyles of the

courts, and the graceful forms of the pointed arches, with alternating voussoirs of white and black marble, are artistic in a high degree. The minarets are, however, inferior to those of Indian, Persian, and Arabic art, though graceful in their proportions.

Nearly all the great mosques are accompanied by the domical tombs (*turbeh*) of their imperial founders. Some of these are of noble size and great beauty of proportion and decoration. The **Tomb of Soliman** is the most beautiful of all, and perhaps the most perfect gem of Turkish architecture, with its elegant arcade surrounding the octagonal mausoleum-chamber. That of Roxelana (Khourrem), his favorite wife, is also noteworthy. The **fountains** of Constantinople also deserve mention. Of these, the one erected by Ahmet III (1710), near Hagia Sophia, is the most beautiful. They usually consist of a rectangular marble reservoir with pagoda-like roof and broad eaves, the four faces of the fountain adorned each with a niche and basin, and covered with relief carving and gilded inscriptions.

FIG. 90.—INTERIOR OF SULEIMANIYEH, CONSTANTINOPLE.

PALACES. In this department the Turks have done little

of importance. The buildings in the Seraglio gardens are low and insignificant. The **Tchinli Kiosque,** now the Imperial Museum, is however, a simple but graceful two-storied edifice, consisting of four vaulted chambers in the angles of a fine cruciform hall, with domes treated like those of Bijapur on a small scale; the tiling and the veranda in front are particularly elegant; the design suggests Persian handiwork. The later palaces, designed by Armenians, are picturesque white marble and stucco buildings on the water's edge; they possess richly decorated halls, but the details are of a debased European rococo style, quite unworthy of an Oriental monarch.

MONUMENTS. ARABIAN: "Mosque of Omar," or Dome of the Rock, 638; El Aksah, by 'Abd-el-Melek, 691, both at Jerusalem; Mosque of 'Amrou at Cairo, 642; mosques at Kairouân, 665; great mosque of El Walîd, Damascus, 705-717. Bagdad built, 755. Great mosque at Kairouân, 737. At Cairo, Ibn Touloun, 876; Gama-El-Azhar, 971; "Tombs of Khalîfs" (Karafah), 1250-1400; Moristan Kalaoun, 1284; Medresseh Sultan Hassan, 1356; Barkouk, 1382; El Azhar enlarged; El Mûayyad, 1415; Kaït Bey, 1463; Sinan Pacha at Boulak, 1568; El Bordeiny, 1638; "Tombs of Mamelukes," 16th century. Also palaces, baths, fountains, mosques, and tombs. MORESQUE: Mosques at Tunis, Fez, Algiers, Tlemcen; mosque at Saragossa, 713; mosque and arsenal at Tunis, 742; great mosque at Cordova, 786, 876, 975; sanctuary, 14th century. Mosques, baths, etc., at Cordova, Tarragona, Segovia, Toledo, 960-980; mosque of Sobeiha at Cordova, 981. Palaces and mosques at Fez; great mosque at Seville, 1172. Extensive building in Morocco close of 12th century. Giralda at Seville, 1160; Alcazars in Malaga and Seville, 1225-1300; Alhambra and Generalife at Granada, 1248, 1279, 1306; also mosques, baths, etc. Yussuf builds palace at Malaga, 1348; palaces at Granada. PERSIAN: Tombs near Bagdad, 786 (?); mosque at Tabriz, 1300; tomb of Khodabendeh at Sultaniyeh, 1313; Meidan Shah (square) and Mesjid Shah (mosque) at Ispahan, 17th century; Medresseh (school) of Sultan Hussein, 18th century; palaces of Chehil Soutoun (forty columns) and Aineh Khaneh (Palace of Mirrors). Baths, tombs, bazaars, etc., at Cashan, Koum, Kasmin, etc. Aminabad Caravanserai between

Shiraz and Ispahan; bazaar at Ispahan. Mosques and tombs at Bokhara and Samarkhand, Mosul, Ardebil, etc.

INDIAN: Mosque and "Kutub Minar" (tower) *cir.* 1200; Tomb of Altumsh, 1236; mosque at Ajmir, 1211-1236; tomb at Old Delhi; Adina Mosque, Maldah, 1358. Mosques Jumma Musjid and Lal Durwaza at Jaunpore, first half of 15th century. Mosque and bazaar, Kalburgah, 1435 (?). Mosques at Ahmedabad and Sirkedj, middle 15th century. Mosque Jumma Musjid and Tomb of Mahmûd, Bijapur, *cir.* 1550. Tomb of Humayûn, Delhi; of Mohammed Ghaus, Gwalior; mosque at Futtehpore Sikhri; palace at Allahabad; tomb of Akbar at Secundra, all by Akbar, 1556-1605. Palace and Jumma Musjid at Delhi; Muti Musjid (Pearl mosque) and Taj Mahal at Agra, by Shah Jehan, 1628-1658.

TURKISH: Seljûk ruins at Konieh and Sivas. Tomb of Osman Brusa, 1326; Green Mosque (Yeshil Djami) Brusa, *cir.* 1350. Mosque at Isnik (Nicæa), 1376. Mehmediyeh (mosque Mehmet II) Constantinople, 1453; mosque at Eyoub; Tchinli Kiosque, by Mehmet II, 1450-60; mosque Bayazid, 1500; Selim I, 1520; Mosque of Selim at Adrianople; Suleimaniyeh, by Sinan, 1553; Ahmediyeh, by Ahmet I, 1608; Yeni Djami, 1665; Nouri Osman, by Osman III, 1755; mosque Mohammed Ali in Cairo, 1824. Khans, cloistered courts for public business and commercial lodgers, various dates, 16th and 17th centuries (Validé Khan, Vizir Khan), vaulted bazaars, fountains, Seraskierat Tower, all at Constantinople.

CHAPTER XIII

EARLY MEDIÆVAL ARCHITECTURE

IN ITALY AND FRANCE

BOOKS RECOMMENDED: As for Chapter X, Cummings, Dehio, Hübsch, Jackson. Also, Baum, *Romanesque Architecture in France.* Cattaneo, *L'Architecture en Italie.* De Dartein, *Etudes sur l'architecture lombarde.* Enlart, *Manuel d'archéologie française; L'Art Romane en Italie.* Lasteyrie, *L'Architecture religieuse à l'époque romane.* Lenoir, *Architecture monastique.* Mâle, *L'Art Réligieux du XII^me^ Siècle en France.* Martin, *L'Architecture Romane.* Mothes, *Baukunst des Mittelaliers in Italien.* Osten, *Bauwerke in der Lombardei.* Porter, *Mediæval Architecture; Lombard Architecture.* Quicherat, *Mélanges d'histoire et d'archéologie.* Révoil, *Architecture romane du midi de la France.* Rivoira, *Architettura romana.* Ruprich-Robert, *L'Architecture normande.* De Verneilh, *L'Architecture byzantine en France.* Viollet-le-Duc, *Dictionnaire raisonné de l'architecture française* (especially in Vol. I, Architecture religieuse); *Discourses on Architecture.*

EARLY MEDIÆVAL EUROPE. The partition of the Roman Empire in the West in the fifth century A.D., and the ruin of its capital under successive assaults (Alaric 410, Attila, Genseric, Odoacer 476) marked the beginning of a new era in Western architecture. The so-called Dark Ages which followed these events constituted the formative period of the new Western civilization, during which the Celtic and Germanic races were being Christianized and subjected to the authority and to the educative influences of the Church. Under these conditions a new architecture was developed, founded upon the traditions of the early Christian builders, modified in different regions by Roman or Byzantine influences. For

Rome, even ruined, never wholly lost her antique prestige, and Roman monuments covering the soil of Southern Europe were a constant object lesson to the builders of that time. To this new architecture of the West, which in the tenth and eleventh centuries first began to achieve worthy and monumental results, the generic name of **Romanesque** has been commonly given, in spite of the great diversity of its manifestations in different countries.

CHARACTER OF THE ARCHITECTURE. Romanesque architecture was pre-eminently ecclesiastical. Civilization and culture emanated from the Church, and her requirements and discipline gave form to the builder's art. But the basilican style, which had so well served her purposes in the earlier centuries and on classic soil, was ill-suited to the new conditions. Corinthian columns, marble incrustations, and splendid mosaics were not to be had for the asking in the forests of Gaul or Germany, nor could the Lombards and Ostrogoths in Italy or their descendants reproduce them. The basilican style was complete in itself, possessing no seeds of further growth. The churchmen of Italy and Western Europe sought to rear with unskilled labor churches of brick or stone in which the general dispositions of the basilica should appear in simpler, more massive dress, and, as far as possible, in a fireproof construction with vaults of stone. This problem underlies all the varied phases of Romanesque architecture; its final solution was not, however, reached until the Gothic period, to which the Romanesque forms the transition and stepping-stone.

MEDIÆVAL ITALY. Italy in the early Middle Ages stood midway between the civilization of the Eastern Empire and the semi-barbarism of the West. Rome, Ravenna, and Venice early became centres of culture and maintained continuous commercial relations with the East. Architecture did not lack either the inspiration or the means for advancing on new lines. But its advance was by no means the same everywhere. The

unifying influence of the church was counterbalanced by the provincialism and the local diversities of the various Italian states, resulting in a wide variety of styles. These, however, may be broadly grouped in five divisions: the **Lombard,** the **Tuscan-Romanesque,** the **Italo-Byzantine,** the **Siculo-Arabic** in Sicily, and the unchanged **Basilican** or Early Christian, which last continued to be practised in Rome throughout the Middle Ages.

FIG. 91.—INTERIOR OF SAN AMBROGIO, MILAN.

LOMBARD STYLE. Owing to the general rebuilding of ancient churches under the more settled social conditions of the eleventh and twelfth centuries, little remains to us of the architecture of the three preceding centuries in Italy, except the Roman basilicas and a few baptisteries and circular churches, already mentioned in Chapter X. The so-called Lombard monuments belong mainly to the eleventh and twelfth centuries, though a few churches and portions of others belong to earlier and later dates. They are found not only in Lombardy, but also in Venetia and the Æmilia. Milan, Pavia,

Piacenza, Bologna, and Verona were important centres of development of this style. The churches were frequently vaulted, but the plans were basilican, with such variations as resulted from efforts to meet the exigencies of vaulted construction. In these the nave was narrowed, and instead of rows of columns carrying a thin clearstory wall, a few massive piers of masonry, carrying the pier-arches, supported the heavy ribs of the groined vaulting, as in S. Ambrogio, Milan (Fig. 91), which is now regarded as the earliest complete example of the style, and in San Michele Pavia (Fig. 92). To resist the thrust of the main vault, the clearstory was sometimes suppressed, the side-aisle carried up in two stories forming galleries, and rows of chapels added at the sides, their partitions forming buttresses. The piers were often of clustered section, the better to receive the various arches and ribs they supported. This reveals the introduction of a new principle as well as of a new form into architectural design: the substitution of scientific logic for tradition in the adaptation of each structural member to its particular function. This principle is only dimly perceived in Byzantine and basilican architecture; in these Lombard piers and vaults it is frankly and vigorously applied. It is the germinant principle of all Gothic design. The vaulting was in square divisions or *vaulting-bays*,* each embracing two pier-arches which met upon an intermediate pier lighter than the others. Thus the whole aspect of the interior was revolutionized. The spaciousness and decorative elegance of the basilicas were here exchanged for

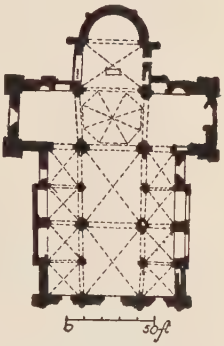


FIG. 92.—PLAN OF SAN MICHELE, PAVIA.

* Those of S. Michele were rebuilt in the sixteenth century in four oblong bays, one for each pier-arch.

a severe and massive dignity; their lightness of construction on a simple system incapable of further development, for a heavy vaulted system destined to a scientific evolution extending through centuries of progress. The choir was sometimes raised a few feet above the nave, to allow of a crypt and *confessio* beneath, reached by broad flights of steps from the nave. Sta. Maria della Pieve at Arezzo (ninth-eleventh century), **S. Ambrogio** at Milan (tenth-twelfth centuries), **S. Michele** at Pavia (late eleventh century), the **Cathedral of Piacenza** (1122), and **S. Zeno** at Verona (1139) are notable monuments of this style.

FIG. 93.—WEST FRONT AND CAMPANILE OF CATHEDRAL, PIACENZA.

LOMBARD EXTERIORS. The simple exteriors of the Lombard churches were usually effective and well composed. Slender colonnettes or long pilasters, blind arcades, and open arcaded galleries under the eaves gave light and shade to these exteriors. The façades were mere frontispieces with usually a single broad gable, the three aisles of the church being merely

suggested by flat or round pilasters dividing the front (Fig. 93). Gabled porches, with columns resting on the backs of lions or monsters, adorned the doorways. The carving was often of a fierce and grotesque character. Detached bell-towers or *campaniles* adjoined many of these churches; square and simple in mass, but with well-distributed openings and well-

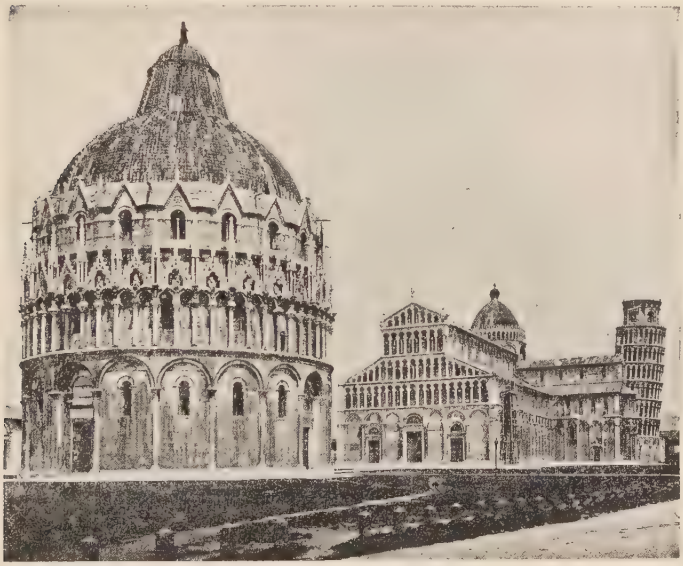


FIG. 94.—BAPTISTERY, CATHEDRAL, AND LEANING TOWER, PISA.

proportioned belfries (San Abbondio, Como; Parma; Piacenza, Fig. 93; S. Zeno at Verona, etc.).

THE TUSCAN ROMANESQUE. The churches of this style (sometimes called the **Pisan**) were less vigorous but more elegant in design than the Lombard. They were basilicas in plan, with timber ceilings and high clearstories on columnar arcades. In their external decoration they betray the influence of Byzantine traditions, especially in the use of white and

colored marble in alternating bands or in paneled veneering. Still more striking are the external wall-arcades sometimes occupying the whole height of the wall and carried on flat pilasters, sometimes in superposed stages of small arches on slender columns standing free of the wall. In general the decorative element prevailed over the constructive in the design of these picturesquely beautiful churches, some of which

FIG. 95.—INTERIOR OF PISA CATHEDRAL.

are of noble size. The **Duomo** (cathedral) of **Pisa,** built 1063–1118, is the finest monument of the style (Figs. 94, 95). It is 312 feet long and 118 wide, five-aisled with long transepts and an elliptical dome of later date over the *crossing* (the intersection of nave and transepts). Its richly arcaded front and banded flanks strikingly exemplify the decorative methods of the Tuscan Romanesque builders. The circular **Baptistery** (1153; upper half of exterior, fourteenth century), with its lofty domical central hall surrounded by an aisle in two stories, and the famous **Leaning Tower** (1174), both designed with

external arcading, combine with the Duomo to form the most remarkable group of ecclesiastical buildings in Italy, if not in Europe (Fig. 94).

The same style appears in more flamboyant shape in some of the churches of Lucca. The cathedral **S. Martino** (1060; façade, 1204; nave altered in fourteenth century) is the finest and largest of these; **S. Michele** (façade, 1288) and S. Frediano (twelfth century) have the most elaborately decorated façades. The same principles of design appear in the cathedral and several other churches in Pistoia and Prato; but these belong, for the most part, to the Gothic period.

FLORENCE. The church of **S. Miniato,** near Florence (1013–60), shows a modification of the Pisan style. It is in plan a basilica with the nave divided into three parts by two transverse arches, carrying a richly painted timber roof, resembling that of Messina Cathedral.* The interior is embellished with encrusted patterns in black and white marble. The exterior is adorned with wall-arches and with panelled veneering in white and dark marble, instead of the horizontal bands of the Pisan churches, a blending of Pisan and Italo-Byzantine methods. The **Baptistry** of Florence, originally the cathedral, an imposing polygonal domical edifice of the tenth century, presents externally one of the most admirable examples of this practice. Its marble veneering in black and white, with pilasters and arches of excellent design, attributed by Vasari to Arnolfo di Cambio, is by many considered to be much older, although restored and altered by him in 1294.

Suggestions of the Pisan arcade system are found in widely scattered examples in the east and south of Italy, mingled with features of Lombard and Byzantine design. In Apulia as at Bari, Caserta Vecchia (1100), Molfetta (1192), and in Sicily, the Byzantine influence is conspicuous in the use of

* Destroyed by the earthquake of December 28, 1908. The Florentine Baptistry is dated by some authorities as early as the 5th Century.

domes and in many of the decorative details. In the **Siculo-Arabic** style the churches of Palermo and Monreale erected after the Norman conquest—some of them domical, some basilican—show a strange but picturesque and beautiful mixture of Romanesque, Byzantine, and Arabic forms. The **Cathedrals of Monreale** and **Palermo** (1185) and the churches of the **Eremiti** and **La Martorana** at Palermo are the most important. The superb interior and cloister of Monreale should be mentioned; also the shameful disfigurement of the interior of Palermo Cathedral by Fuga in the eighteenth century.

The **Italo-Byzantine** style has already been treated in the latter part of Chapter XI.

CAMPANILES. The mediæval bell-towers of Italy are invariably isolated structures, usually square in plan and without spires. The earliest of these, adjoining the two churches of San Apollinare at Ravenna (see p. 118), and presumably of the eighth century are plain circular towers with few and small openings, except in the uppermost story, where larger arched openings permit the issue of the sound of the bells. It was at Rome, and not till the ninth or tenth century, that the campanile became a recognized feature of church architecture. The Roman campaniles are plain square towers, rising with little architectural adornment to a height usually of a hundred feet or more, with a few small openings below the belfry stage, where coupled arched windows separated by a simple column open from each face of the tower, which is covered by a low pyramidal roof. The towers of San Lorenzo, Sta. Maria in Cosmedin, Sta. Maria in Trastevere, and S. Giorgio in Velabro are examples of this type. Most of the Roman examples date from the eleventh and twelfth centuries.

In other cities, the campanile was treated with some variety of form and decoration, as well as of material. In Lombardy and Venetia the square red-brick shaft of the tower is often

adorned with long, narrow pilaster strips and an arcaded cornice, as at Piacenza (p. 164, Fig. 93) and Venice. The openings at the top may be three or four in number on each face, and the plan is sometimes octagonal. The brick octagonal campanile of **S. Gottardo** at Milan is one of the finest Lombard church towers. At Verona the brick tower on the Piazza dell' Erbe and that of S. Zeno are conspicuous and at Pomposa, Torcello, Milan (S. Ambrogio, S. Satiro), Padua, Modena, and Como are other interesting examples; but every important town of northern Italy possesses one or more examples of these structures dating from the eleventh, twelfth, or thirteenth century.

The most noted bell-towers in Italy are those of Venice, Pisa, and Florence. The great **Campanile** of **St. Mark** at Venice, begun in 874, carried higher in the twelfth and fourteenth centuries, and finally completed in the sixteenth century with the marble belvedere and wooden spire so familiar in pictures of Venice, was formerly the highest in Italy, measuring approximately 325 feet to the summit. This superb historic monument, which fell in sudden ruin in 1902, has been completely rebuilt on the original design. The **Leaning Tower** of Pisa (see p. 165, Fig. 94) dates from 1174, and is unique in its plan and its exterior treatment with superposed arcades. Begun apparently as a leaning tower, it seems to have increased this lean to a dangerous point, by the settling of its foundations during construction, as its upper stages were made to deviate slightly towards the vertical from the inclination of the lower portion. It has always served rather as a watch-tower and belvedere than as a bell-tower. The **Campanile** adjoining the Duomo at **Florence** is described in Chapter XIX.

WESTERN ROMANESQUE ARCHITECTURE. In Western Europe the unrest and lawlessness which attended the unsettled relations of society under the feudal system long retarded the establishment of that social order without which

architectural progress is impossible. With the eleventh century there began, however, a great activity in building, principally among the monasteries, which represented all that there was of culture and stability amid the prevailing disorder. Undisturbed by war, the only abodes of peaceful labor, learning, and piety, they had become rich and powerful, both in men and land. The monastic builders, with little technical training, but with plenty of willing hands, sought out new architectural paths to meet their special needs. Remote from classic and Byzantine models, and mainly dependent on their own resources, they often failed to realize the intended results. But skill came with experience, and with advancing civilization and a surer mastery of construction came a finer taste and greater elegance of design. Meanwhile military architecture developed a new science of building, and covered Europe with imposing castles, admirably constructed and often artistic in design as far as military exigencies would permit.

CHARACTER OF THE STYLE. The Romanesque architecture of the eleventh and twelfth centuries in Western Europe (sometimes called the **Round-Arched Gothic**) was thus predominantly though not exclusively monastic. This gave it a certain unity of character in spite of national and local variations. The problem which the wealthy orders set themselves was, like that of the Lombard church-builders in Italy, to adapt the basilica plan to the exigencies of vaulted construction. Massive walls, round arches stepped or recessed to lighten their appearance, heavy mouldings richly carved, clustered piers and jamb-shafts, capitals either of the *cushion* type or imitated from the Corinthian, and strong and effective carving in which the influence of Byzantine ivories and MSS. illuminations is clearly discernible—all these are features alike of French, German, English, and Spanish Romanesque architecture.

THE FRENCH ROMANESQUE. Though monasticism pro-

duced remarkable results in France, architecture there did not wholly depend upon the monasteries. France was not a unified nation, but a group of feudal provinces under powerful dukes who owed slight allegiance to the king in Paris. Accordingly French architecture varied widely in different regions. The south was Gallo-Roman; the north and east were populated by Teutons—Goths, Franks, Burgundians, Normans. Southern Gaul (**Provence**) was full of classic remains and classic traditions, while at the same time it maintained close trade relation, with Venice and the east. At Arles, Avignon, St. Gilles, Montmajour, etc., classic models strongly influenced the details, if not the plans, of an interesting series of churches remarkable especially for their porches rich with figure sculpture and for their elaborately carved details. The classic archivolt, the Corinthian capital and Roman enriched mouldings, are evident in the porches of Notre Dame des Doms at Avignon, of the Church of **St. Gilles,** and of **St. Trophime** at Arles. The churches of Provence were almost all barrel-vaulted; so were their cloisters, as at Montmajour, Arles and Elne. They also display Byzantine and Lombard influences in their sculpture and other details. The Byzantine influence is paramount in the many domical churches of **Aquitania,** situated on the main highway of commerce with the East.*

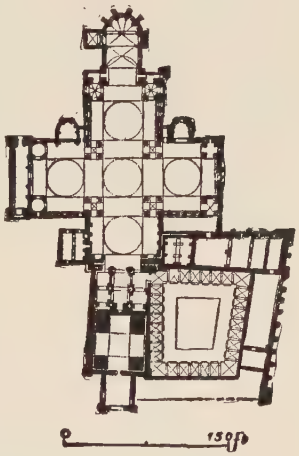


FIG. 96.—PLAN OF ST. FRONT.

* See Viollet-le-Duc, *Dictionnaire raisonné,* article ARCHITECTURE, vol. i, pp. 66 *et seq.*; also Enlart, *Manuel d'archéologie française,* i, pp. 210-212, 284-286

FIG. 97.—INTERIOR OF ST. FRONT, PERIGUEUX.

The domical cathedral of **Cahors** (1050–1100), an obvious imitation of S. Irene at Constantinople, and the later Cathedral of **Angoulême** (1119) display a notable advance in architectural skill outside of the monasteries. The church of **St. Front** at Perigueux, built in 1120, reproduced the plan of St. Mark's in cut stone instead of brick and without its rich applied decoration (Figs. 96, 97). Among the abbeys, **Fontevrault** (1101–1119) closely resembles Angoulême, but surpasses it in the elegance of its choir and chapels. In these and a number of other domical churches of the same Franco-Byzantine type in Aquitania, the substitution of the Latin cross in the plan for the Greek cross used in St. Front, evinces the Gallic tendency to work out to their logical end new ideas or new applications of old ones. These striking variations on Byzantine themes might have developed into an independent local style but for the overwhelming tide of Gothic influence which later poured in from the North.

FIG. 98.—PLAN OF NOTRE DAME DU PORT, CLERMONT.

In Auvergne another type appears in a number of large churches built during the eleventh and twelfth centuries, with apsidal and transeptal

chapels and aisles carried around the apse, as in St. Etienne, Névers, **Notre Dame du Port** at Clermont-Ferrand (Figs. 98, 99), **St. Paul** at Issoire (all three built in the eleventh century), and other examples, having high barrel-vaults over the nave, sometimes of pointed section. The thrust of these ponderous vaults was clumsily resisted by half-barrel vaults over the side-aisles, transmitting the strain to massive side-walls (Fig. 99), or by high side-aisles with transverse barrel or groined vaults over each bay. In either case the clearstory was suppressed—a fact which mattered little in the sunny southern provinces. The great church of **St. Sernin** at Toulouse in Aquitaine, though somewhat remote, embodies this type on a grand scale (Fig. 100). **At Le Puy en Vélay** octagonal domes on squinches cover each bay of the nave. In this volcanic region the use of stone of two colors for facing the exterior walls with a species of structural mosaic was resorted to with good effect (Clermont-Ferrand, Issoire, Le Puy).

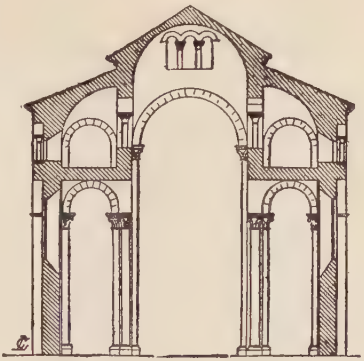


FIG. 99.—SECTION OF NOTRE DAME DU PORT, CLERMONT.

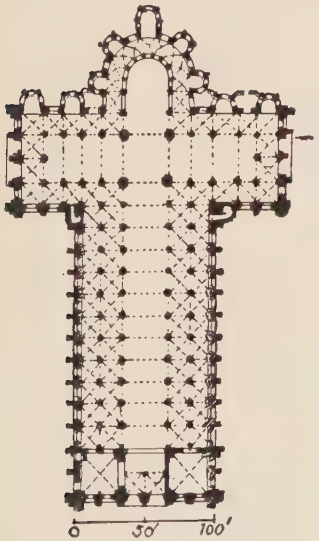


FIG. 100.—PLAN OF ST. SERNIN, TOULOUSE.

The powerful duchy of **Burgundy,** which for centuries defied the royal authority, contained the important monastic centres of **Cluny,** Cîteaux and Clairvaux, each the mother of a distinct order whose influence extended far beyond the borders of the province. The Clunisians were leaders in architectural progress. Of the vast monastery of Cluny only a transept and tower remain (1089); but the abbey of **Vézelay** (also begun 1089) remains intact, except for the Gothic rebuilding of its eastern arm. In this splendid church a groined vault replaced the barrel-vault, though the oblong plan of the vaulting-bays, due to the nave being wider than the pier-arches, led to somewhat awkward twisted surfaces in the vaulting. But even here the vaults had insufficient lateral buttressing, and began to crack and settle; so that flying arches had to be later built over the side-aisle roofs. In the ante-chapel (1130) side-aisle galleries resist the thrust, and the groined vaults and arches are pointed. It was not till the second half of that century however, that the flying buttress was generally combined with such vaults, so as to permit of high clearstories for the better lighting of the nave; and the problem of satisfactorily vaulting an oblong space with a groined vault was not solved until the final decades of the twelfth century.

In the cathedral of **Autun** the nave is covered by a pointed barrel-vault, but in the church of St. Jean in the same town the nave is cross-vaulted, as at Vézelay. **Cîteaux** was the mother-house of the Cistercian order, in which architectural simplicity was insisted on, and the square east end generally replaced the apse and ambulatory; a practice which strongly influenced English architecture later.

NORTHERN FRANCE. In the **Royal Domain** great architectural activity does not appear to have begun until the beginning of the Gothic period in the middle of the twelfth century. But in **Normandy,** and especially at Caen, there were produced, between 1046 and 1120, some remarkable churches,

in which a high clearstory was secured in conjunction with a vaulted nave, by the use of "six-part" vaulting. Fig. (101) This was an awkward expedient, by which a square vaulting-bay was divided into six parts by the groins and by a middle transverse rib, necessitating two narrow skew vaults meeting at the centre. Two of these relatively narrow side-aisle bays were thus grouped under one vaulting-bay, avoiding the oblong vault-bay occurring at Vézelay. This unsatisfactory device was retained for over a century, occurring frequently in early Gothic churches in France, and occasionally in Great Britain. It made it possible to resist the thrust by high side-aisles, and yet to open windows above these under the cross-vaults. The abbey churches of **St. Etienne** (the Abbaye aux Hommes) and **Ste. Trinité** (Abbaye aux Dames), at Caen, built in the time of William the Conqueror, were among the most magnificent churches of their time, both in size and in the excellence and ingenuity of their construction. The great abbey church of **Mont St. Michel** (1020; east end late Gothic) should also be mentioned here. At the same time these and other Norman churches showed a great advance in their internal composition. A well-developed triforium or subordinate gallery was introduced between the pier-arches and clearstory, and all structural membering of the

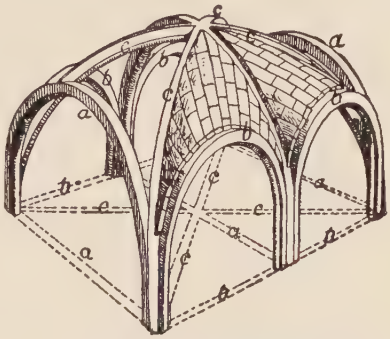


FIG. 101.—A SIX-PART RIBBED VAULT, SHOWING TWO COMPARTMENTS WITH THE FILLINGS COMPLETE.

a, a, Transverse ribs (doubleaux); b, b, Wall-ribs (formerets); c, c, Groin-ribs (diagonaux).

(All the ribs are semicircles.)

edifice was better proportioned and more logically expressed than in most contemporary work.

ARCHITECTURAL DETAILS. The details of French Romanesque architecture varied considerably in the several provinces, according as classic, Byzantine, or local influences prevailed. Except in a few of the Aquitanian churches, the round arch was universal. The walls were heavy and built of rubble between facings of stones of moderate size dressed with the axe. Windows and doors were widely splayed to diminish the obstruction of the massive walls, and were treated with jamb-shafts and recessed arches. These were usually formed with large cylindrical mouldings, richly carved with leaf ornaments, zigzags, billets, and grotesques. Figure-sculpture was more generally used in the South than in the North. The interior piers were sometimes cylindrical, but more often clustered, and where square bays of four-part or six-part vaulting were employed, the piers were alternately lighter and heavier. Each shaft had its independent capital either of the block type or of a form resembling somewhat that of the Corinthian order. During the eleventh century it became customary to carry up to the main vaulting one or more shafts of the compound pier to support the vaulting ribs. Thus the division of the nave into *bays* was accentuated, while at the same time the horizontal three-fold division of the height by a well-defined triforium between the pier-arches and clearstory began to be likewise emphasized.

EXTERIORS. Until the middle of the twelfth century there was no systematic development of external buttressing. The exteriors were on this account generally plain and flat. The windows were small, the mouldings simple, and towers were rarely combined with the body of the church until after the beginning of the twelfth century. Then they appeared as mere belfries of moderate height, with pyramidal roofs and effectively arranged openings, the germs of the noble Gothic

spires of later times. Externally the western porches and portals were the most important features of the design, producing an imposing effect by their massive arches, clustered piers, richly carved mouldings, and deep shadows.

CLOISTERS, ETC. Mention should be made of the other monastic buildings which were grouped around the abbey churches of this period. These comprised refectories, chapter-halls, cloistered courts surrounded by the conventual cells, and a large number of accessory structures for kitchens, infirmaries, stores, etc. The whole formed an elaborate and complex aggregation of connected buildings, often of great size and beauty, especially the refectories and cloisters. Most of these conventual buildings have disappeared, many of them having been demolished during the Gothic period to make way for more elegant structures in the new style. There remain, however, a number of fine cloistered courts in their original form, especially in Southern France. Among the most remarkable of these are those of **Moissac, Elne, Vaison** and **Montmajour.**

MONUMENTS not specially mentioned in text. ITALY. (For basilicas and domical churches of 6th-12th centuries see pp. 118, 119.)—Before 11th century: Sta. Maria at Toscanella, altered 1206; S. Donato, Zara; chapel at Friuli; baptisteries at Biella, Albenga, Asti, Galliano; Rotondo at Brescia; S. Michele in Monte, Pola, 997. 11th century: S. Abbondio, Como, 1013; SS. Pietro e Paolo, Bologna, 1014; S. Giovanni, Viterbo; Sta. Maria della Pieve, Arezzo; S. Antonio, Piacenza, 1014; Duomo at Bari, 1027 (much altered); Duomo and baptistery, Novara, 1030; Duomo at Parma, 1058-1117; Duomo at Modena, late 11th century.—12th century: in Calabria and Apulia, cathedrals of Trani, 1100; Benevento; churches S. Giovanni at Brindisi, S. Niccolo at Bari, 1139. In Sicily, Duomo at Messina; Duomo at Cefalù, 1131-48. In Northern Italy, S. Tomaso in Limine, Bergamo, 1100 (?); Duomo at Cremona, 1107-90; Sta. Giulia, Brescia; S. Lorenzo, Milan, rebuilt 1119, and remodeled 1580; S. Giovanni and S. Frediano, Lucca. In Dalmatia, cathedral at Zara, 1192-1204. Many castles and early town-halls, as at Bari, Brescia, Lucca, etc.

FRANCE: Previous to 11th century: Bapt. St. Jean, Poitiers,

Chapel St. Laurent, Grenoble; Crypts at Jouarre and Poitiers, all 7th century; St. Germiny-des-Prés, 806; Chapel of the Trinity, St. Honorat-des-Lérins; Ste. Croix de Montmajour.—11th century: St. Germain-des-Prés, Paris, 1014; vault, choir later; St. Philibert, Tournus, 1009-19; Conques, 1035; Cérisy-la-Forêt, Vignory; St. Genou; Jumièges; Montiérender; porch of St. Benoît-sur-Loire, 1030; St. Sépulcre at Neuvy, 1045; St. Etienne, Névers, 1063; Ste. Croix at Quimperlé, 1081; circular church of Rieux-Mérinville, church of St. Savin in Auvergne, the churches of St. Hilaire, Ste. Radegonde and Notre-Dame-la-Grande at Poitiers, all at close of 11th and beginning of 12th century. Many crypts under later churches.—12th century: Solignac and Fontevrault, 1120; St. Etienne (Périgueux), St. Avit-Sénieur; Souillac, Broussac, etc., early 12th century. St. Trophime at Arles, 1110, cloisters later; St. Gilles, 1116; church of Vaison; abbeys and cloisters at Montmajour, Moissac (with fragments of a 10th-century cloister built into present arcades); St. Paul-du-Mausolée; St. Maurice, Angers; Paray-le-Monial; Notre Dame de la Coulture; Notre Dame des Doms, Avignon; St. Eutrope, Saintes; St. Ours, Loches, 1165; St. Saturnin (Sernin) at Toulouse (original church, 1060-96; rebuilt 12th century; nave rebuilt 14th century on old design). Many other abbeys, parish churches, and a few cathedrals in Central and Northern France especially.

CHAPTER XIV

EARLY MEDIÆVAL ARCHITECTURE—*Continued*

IN GERMANY, GREAT BRITAIN, AND SPAIN

BOOKS RECOMMENDED: As before, Dehio, Hübsch and Jackson. Also Bond, *Introduction to English Church Architecture.* Boisserée, *Nieder Rhein.* Ditchfield, *The Cathedrals of England.* Förster, *Denkmäler deutscher Baukunst.* Hasak, *Die romanische und die gotische Baukunst* (in *Handbuch d. Arch.*). Lamperez y Romea, *Historia de la arquitectura Cristiana Española en la Edad Media.* Möller, *Denkmäler der deutschen Baukunst.* Moore, *The Mediæval Church Architecture of England.* Otte, *Geschichte der romanischen Baukunst in Deutschland.* Reber, *History of Mediæval Architecture.* Rickman, *An Attempt to Discriminate the Styles of Architecture.* Ross and McGibbon, *Ecclesiastical Architecture of Scotland.* Scott, *English Church Architecture.*

MEDIÆVAL GERMANY. Architecture developed less rapidly and symmetrically in Germany than in France. The unwieldy dominion known as the "Holy Roman Empire" was ruled over successively by the Saxon, Franconian and Suabian lines, but without establishing real political unity in its vast territory. Only in the Rhine valley were the conditions early favorable to progress in the arts. The early churches were of wood, and the substitution of stone for wood proceeded slowly. During the Carolingian epoch (800–919), however, a few important buildings had been erected, embodying Byzantine and classic traditions. Among these the most notable was the **Minster** or palatine chapel of Charlemagne at **Aix-la-Chapelle,** an ob-

vious imitation of San Vitale at Ravenna. It consisted of an octagonal domed hall surrounded by a vaulted aisle in two stories, but without the eight niches of the Ravenna plan. It was preceded by a porch flanked by turrets. The Byzantine type thus introduced was repeated in later churches, as in the Nuns' Choir at Essen (947) and at Ottmarsheim (1050). In the great monastery at Fulda a basilica with transepts and with an apsidal choir at either end was built in 803. These choirs were raised above the level of the nave, to admit of crypts beneath them, as in many Lombard churches; a practice which, with the reduplication of the choir and apse just mentioned, became very common in German Romanesque architecture.

EARLY CHURCHES. It was in Saxony that this architecture first entered upon a truly national development. The early churches of this province and of Hildesheim (where architecture flourished under the favor of the bishops, as elsewhere under the royal influence) were of basilican plan and destitute of vaulting, except in the crypts. They were built with massive piers, sometimes rectangular, sometimes clustered, the two kinds often alternating in the same nave. Short columns were, however, sometimes used instead of piers, either alone, as at Paulinzelle and Limburg-on-the-Hardt (1024–39), or alternating with piers, as at Hecklingen, **Gernrode** (958–1050), and **St. Godehard** at Hildesheim (1033). A triple eastern apse, and apsidal chapels projecting eastward from the transepts were common elements in the plans, and a second apse, choir, and crypt at the west end were not infrequent. Externally the most striking feature was the association of two, four, or even six square or circular towers with the mass of the church,

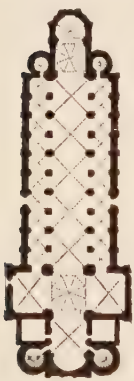


FIG. 102.—PLAN OF MINSTER AT WORMS.

and the elevation of square or polygonal turrets or cupolas over the crossing. These gave a very picturesque aspect to edifices otherwise somewhat wanting in artistic interest.

RHENISH CHURCHES. It was in the Rhine provinces that vaulting was first applied to the naves of German churches, nearly a half century after its general adoption in France. Cologne possesses an interesting trio of churches in which the Lombard dome on squinches or on pendentives, with three apses or niches opening into the central area, was associated with a long three-aisled nave (**St. Mary-in-the-Capitol,** rebuilt in 1047; **Great St. Martin's,** 1150–72; **Apostle's Church,** 1160–99; the naves vaulted later). The double chapel at **Schwarz-Rheindorf,** near Bonn (1151), also has the crossing covered by a dome on pendentives. The Lombard influence is also clearly manifest in many external details of these Rhenish churches.

FIG. 103.—ONE BAY OF CATHEDRAL AT SPIRES.

The vaulting of the nave itself was developed in another series of edifices of imposing size, the cathedrals of **Mayence** (1036) **Spires** (Speyer), the cathedral-mausoleum of the Franconian, Hohenstaufen and earlier Hapsburg emperors, and **Worms,** and the **Abbey of Laach,** all built in the eleventh century and vaulted early in the twelfth. In the first three the main vaulting is in square bays, each covering two bays of the nave, the piers of which are alternately lighter and heavier (Figs. 102, 103). There was no triforium gallery, and stability

was secured only by excessive thickness in the piers and clear-story walls, and by bringing down the main vault as near to the side-aisle roofs as possible.

RHENISH EXTERIORS. These great churches, together with those of **Bonn** and **Limburg-on-the-Lahn** and the cathedral of **Treves** (Trier, 1047), are interesting, not only by their size and dignity of plan and the somewhat rude massiveness of their construction, but even more so by the picturesqueness of their external design (Fig. 104). Espepecially successful is the massing of the large and small turrets with the lofty nave-roof and with the apses at one or both ends. The arcading upon the exterior walls, and the open arcaded dwarf galleries under the cornices of the apses, gables, and dome-turrets gave to these Rhenish churches an external beauty hardly equalled in other contemporary edifices. This method of exterior design, and the system of vaulting in square bays over double bays of the nave, were probably derived from the Lombard churches of Northern Italy, with which the German emperors had many political relations.

FIG. 104.—EAST END OF CHURCH OF THE APOSTLES, COLOGNE.

The Italian influence is also encountered in a number of circular churches of early date, as at Fulda (ninth-eleventh

century), and Drügelte, and in façades like that at Rosheim, which is a copy in little of San Zeno at Verona.

Elsewhere in Germany architecture was in a backward state, especially in the southern duchies. Outside of Saxony, Franconia, and the Rhine provinces, very few works of importance were erected until the thirteenth century.

SECULAR ARCHITECTURE. Little remains to us of the secular architecture of this period in Germany, if we except the great feudal castles, especially those of the Rhine, which were, after all, rather works of military engineering than of architectural art. The palace of Charlemagne at Aix (the chapel of which was mentioned on p. 174) is known to have been a vast and splendid group of buildings, partly, at least of marble; but hardly a vestige of it remains. Of the extensive **Kaiserburg** at **Goslar** there remain well-defined ruins of an imposing hall of assembly in two aisles with triple-arched windows. At Brunswick the east wing of the **Burg Dankwarderode** displays, in spite of modern alterations, the arrangement of the chapel, great hall, two fortified towers, and part of the residence of Henry the Lion. The **Wartburg** palace of Duke Ludwig III (*cir.* 1150) is more generally known—a three-storied hall with windows effectively grouped to form arcades (upper part modern); while at Gelnhausen and Münzenberg are ruins of somewhat similar buildings. A few of the Romanesque monasteries of Germany have left partial remains, as at **Maulbronn,** which was almost entirely rebuilt in the Gothic period, and isolated buildings in Cologne and elsewhere. There remain also in Cologne a number of Romanesque private houses with coupled windows and stepped gables.

GREAT BRITAIN. Previous to the Norman conquest (1066) there was in the British Isles little architecture worthy of mention. In Ireland a number of round towers with conical tops have given rise to controversy as to their date and purpose, and there are ruins of several small rude churches of

early date. The remains of **Saxon** architecture in England are more important, although somewhat fragmentary and often built over or incorporated into later structures. The church of **Bradford-on-Avon** is nearly intact, and the tower of **Earl's Barton** is the most interesting of a number still standing. The churches of Brixworth, Reculver, St. Pancras at Canterbury, and Monkwearmouth are among the notable Saxon remains in England. All this Saxon architecture is somewhat primitive, showing limited resources and only moderate technical skill; and it suffered greatly from the invasions of the Danes and Norsemen. With the Norman conquest, however, began an extraordinary activity in the building of churches and abbeys. William the Conqueror himself founded a number of these, and his Norman ecclesiastics endeavored to surpass on British soil the contemporary churches of Normandy. The new churches differed somewhat from their French prototypes; they were narrower and lower, but much longer, especially as to the choir and transepts. The cathedrals of **Durham** (1096–1133) and **Norwich** (same date) are important examples (Fig. 105). They also differed from the French churches in two important particulars externally; a huge tower rose usually over the crossing,

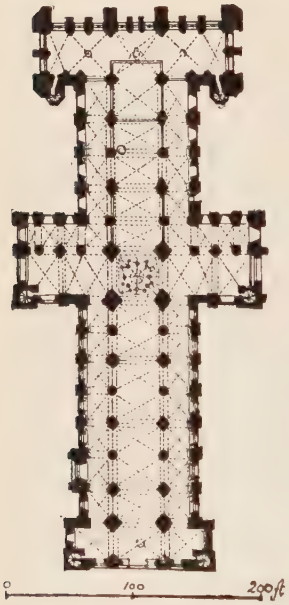


FIG. 105.—PLAN OF DURHAM CATHEDRAL.*

* The transept-like eastern termination, known as the Nine Altars, is a Gothic addition of 1242. The original east end was a plain apse.

and the western portals were small and insignificant. At Durham a "Galilee" chapel (not shown in the plan) takes the place of a porch at the west end, like the ante-churches of St. Benoît-sur-Loire and Vézelay.

THE NORMAN STYLE. The Anglo-Norman builders employed the same general features as the Romanesque builders of Normandy, but with more of picturesqueness and less of refinement and technical elegance. Heavy walls, recessed arches, round mouldings, cubic cushion-caps, clustered piers, and in doorways a jamb-shaft for each stepping of the arch were common to both styles. But in England the Corinthian form of capital is rare.

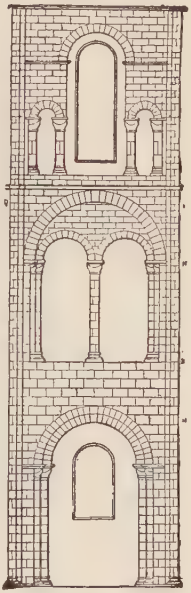


FIG. 106.—ONE BAY OF TRANSEPT, WINCHESTER CATHEDRAL.

NORMAN INTERIORS. The interior design of the larger churches of this period shows a close general analogy to contemporaneous French Norman churches, as appears by comparing the nave of Waltham or Peterboro' with that of Cérisy-la-Forêt, in Normandy. Although the massiveness of the Anglo-Norman piers and walls plainly suggests the intention of vaulting the nave, this intention seems never to have been carried out except in small churches and crypts. All the existing abbeys and cathedrals of this period had wooden ceilings, though many, like Tewkesbury, Norwich, and Gloucester, were vaulted at a later date.* Usually carrying only a wooden nave-roof, the clearstory was, without danger, made lofty and furnished with windows of considerable size. These were placed near the outside of the thick wall, and a passage was left between them and a triple arch on the inner face of the wall—

* The nave of Durham cathedral was, however, completely vaulted in stone during the Romanesque period.

a device imitated from the abbeys at Caen. The vaulted side-aisles were low, with heavy ribs and wide pier-arches, above which was a high triforium gallery under the side-roofs. Thus a nearly equal height was assigned to each of the three stories of the bay, disregarding that subordination of minor to major parts which gives interest to an architectural composition. The piers were quite often round, as at Gloucester, Hereford, Southwell, and Bristol cathedrals and Tewkesbury Abbey. Sometimes round piers alternated with clustered piers, as at Durham and Waltham; and in some cases clustered piers alone were employed, as at Peterboro', Norwich, and Winchester transepts (Fig. 106).

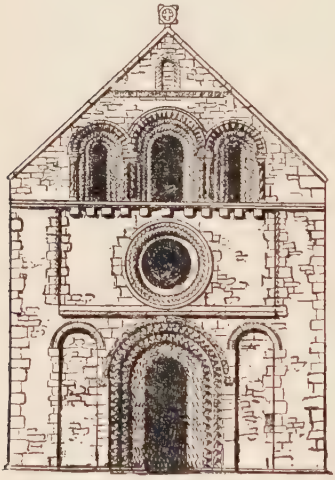


FIG. 107.—FRONT OF IFFLEY CHURCH.

FAÇADES AND DOORWAYS. All the details were of the simplest character, except in the doorways. These were richly adorned with clustered jamb-shafts and elaborately carved mouldings, but there was little variety in the details of this carving. The zigzag was the most common feature, though birds' heads with the beaks pointing toward the centre of the arch were not uncommon. In the smaller churches (Fig. 107) the doorways were better proportioned to the whole façade than in the larger ones, in which they appear as relatively insignificant features. Very few examples remain of important Norman façades in their original form, nearly all of these having been altered after the round arch was displaced by the pointed arch in the latter part of the twelfth century. Iffley church (Fig. 107) is a good example of the style.

SCOTLAND possesses many churches of this period, but nearly all were ruined or injured in the Border wars, and few of these rebuilt. They exhibit a provincial character, many years behind the English developments, but are often extremely picturesque. **Jedburgh Abbey** is the finest of them; Kelso and Iona may also be mentioned.

SPAIN. The capture of Toledo, in 1062, from the Moors, began the gradual emancipation of the country from Moslem rule, and in the northern provinces a number of important churches were erected under the influence of French Romanesque models. The use of domical pendentives, as in the **Panteon** of **S. Isidoro,** at Leon (1063–1149), and in the *cimborio* or dome over the choir at the crossing in old Salamanca cathedral, was probably derived from the domical churches of Aquitania and Anjou. Elsewhere the northern Romanesque type prevailed with modifications, with long nave and transepts, a short choir, and a complete *chevet* with apsidal chapels. The church of **Santiago** at Compostella (1078) is the finest example of this class, in plan closely resembling St. Sernin at Toulouse. These churches nearly all had groined vaulting over the side-aisles and barrel-vaults over the nave, like the churches of Auvergne and Burgundy (p. 172). They differed, however, in the treatment of the crossing of nave and transepts, over which was usually erected a dome or cupola on pendentives or squinches, covered externally by an imposing square lantern or tower, as in the **Old Cathedral** at **Salamanca,** already mentioned (1120–78) and the **Collegiate Church** at **Toro.** The triforium is often omitted. Occasional exceptions to these types are met with, as in the basilican wooden-roofed church of S. Millan at Segovia; in **S. Isidoro** at Leon, with chapels and a later-added square eastern end, and the circular church of the Templars at Segovia.

The architectural details of these Spanish churches did not differ radically from contemporary French work. As in France and England, the doorways were the most ornate parts of the

design, richly adorned with carving and sculpture, as in S. Vincente at Avila (twelfth century). There was no such logical and reasoned-out system of external design as in France, and there is consequently greater variety in the façades. Perhaps the most remarkable thing about the architecture of this period is the slightness of the influence of the Moorish monuments which abounded on every hand. This may be explained by the hatred which was felt by the Christians for the Moslems and all their works.

MONUMENTS not specially mentioned in text. GERMANY: Before 11th century: Circular churches of Münster and Fulda; Lorsch abbey, 774; palace chapel of Charlemagne at Aix-la-Chapelle, 804; St. Stephen, Mayence, 990; primitive nave and crypt of St. Gereon, Cologne, 10th century;—11th century: Churches of Gernrode, Goslar, and Merseburg in Saxony; cathedral of Bremen; Limburg-on-Hardt, 1024; St. Willibrod, Echternach, 1031; Minster at Hersfeld, 1038; Cathedral Hildesheim, 1061; St. Michael, Hildesheim, 1062; St. James, Cologne, 1067; St. Joseph, Bamberg, 1073; round churches of Bonn, Drügelte, Nimeguen; cathedrals of Paderborn and Minden.—12th century: Churches of Klus, Paulinzelle, Hamersleben, 1100-1110; Johannisberg, 1130; Jerichau, 1144-60; Abbey Maulbronn, 1146-73; Great St. Martin's, Cologne, 1150-1200; Cathedral Brunswick, 1172-94; Lübeck, 1172; also churches of Gaudersheim, Hecklingen, Würzburg, St. Matthew at Treves, Limburg-on-Lahn, Sinzig, St. Castor at Coblentz, Diesdorf, Rosheim; round churches of Ottmarsheim and Rippen (Denmark); cathedral of Basle, cathedral and cloister of Zurich (Switzerland).

ENGLAND: Previous to 11th century: Scattered vestiges of Saxon church architecture, as nave of Higham Ferrers, Barnach tower, part of St. Michael's, Oxford; St. Benet's, Cambridge, Deerhurst, etc.—11th century: Crypt of Canterbury Cathedral, 1070; Chapel St. John in Tower of London, 1070; Winchester Cathedral, 1076-93 (nave and choir rebuilt later); St. Alban's Abbey, 1077-1115 (partly remodelled later); Shrewsbury Abbey, 1083; Tewkesbury Abbey, 1087-1123 (vaulted later); Gloucester Cathedral nave, 1089-1100 (vaulted later); Rochester Cathedral nave, west front, cloisters, and chapter-house, 1090-1130; Chichester Cathedral, 1091-1148 (vaulting, transept, cloisters, spires, later); Carlisle Cathedral nave, transepts, 1083-1130;

Hereford Cathedral, nave and choir, 1099-1110 (vaulted later). 12th century: Ely Cathedral, nave, 1107-33; Southwell Cathedral, 1108-35 (choir rebuilt later); Peterboro' Cathedral, 1117-45; Waltham Abbey, early 12th century; Church of Holy Sepulchre, Cambridge, 1130-35; Worcester Cathedral chapter-house, 1140 (?); Oxford Cathedral (Christ Church), 1150-80; Bristol Cathedral chapter-house (square), 1155; Romsey Abbey, late 12th century; St. Cross Hospital near Winchester, 1190 (?). Many more or less important parish churches in various parts of England.

SPAIN: Eremitago at Lena and San Miguel de Lino, 7th and 8th century; church at Naranco, 9th century; San Jaime, Fontana, 11th century; Avila Cathedral, 1091-1200; Lugo Cathedral, 1129-70; Veruela Cathedral, 1146-51; Santiago Cathedral at Coruña, 1150; Sta. Maria at Benavente, 1170-1220; San Pedro at Avila, early 12th century; church at Salas, 12th century; San Pedro at Huesca, 1200-46; Lerida Cathedral, 1203-78; San Millan, San Esteban and Templar's church, all at Segovia, 13th century; cathedral of Tudela (in part), 13th century.

CHAPTER XV

GOTHIC ARCHITECTURE

BOOKS RECOMMENDED: Adamy, *Architektonik des gotischen Stils.* Dehio and Bezold, *Kirchliche Baukunst des Abendlandes.* Enlart, *Manuel d'archéologie française.* Gonse, *L'Art gothique.* Hasak, *Der Kirchenbau; Einzelheiten des Kirchenbaues; der Wohnbau.* (in *Handbuch d. Arch.*). Jackson, *Gothic Architecture.* Moore, *Development and Character of Gothic Architecture.* Porter, *Mediæval Architecture,* Vol. II. Prior, *Gothic Architecture.* Scott, *Mediæval Architecture.* Viollet-le-Duc, *Discourses on Architecture; Dictionnaire raisonné de l'architecture française.*

INTRODUCTORY. The architectural styles which were developed in Western Europe during the period extending from about 1150 to 1450 or 1500 received in an unscientific age the wholly erroneous name of Gothic. This has, however, become so fixed in common usage that it is hardly possible to substitute for it any more scientific designation. In reality the architecture to which it is applied was nothing more than the sequel and outgrowth of the Romanesque, which we have already studied. Its fundamental principles were the same; it was concerned with the same problems. These it took up where the Romanesque builders left them, and worked out their solution under new conditions, until it had developed out of the simple and massive models of the early twelfth century the splendid cathedrals of the thirteenth and fourteenth centuries in England, France, Germany, the Low Countries and Spain.

THE CHURCH AND ARCHITECTURE. The twelfth century

was an era of widespread intellectual awakening, and of profound economic, social and political changes. The revival of law and jurisprudence, the rise of vernacular literature, the growth of commerce and of the use of money, the beginnings of physical science based upon the Aristotelian philosophy, and the power and greatness attained by the church, mark the twelfth and thirteenth centuries as one of the great periods in the history of human progress. The ideas of Church and State were becoming more clearly defined in the common mind. The claims of human right were beginning to present themselves alongside of those of human might. The struggle for ascendency between the crown, the feudal barons, the pope, bishops, and abbots, in France, Germany, England, and other countries, presented itself in varied aspects, but the general outcome was essentially the same. The Church began to appear as something behind and above abbots, bishops, kings, and barons. The supremacy of the papal authority gained increasing recognition, and the episcopacy began to overshadow the monastic institutions. The prerogatives of the crown became more firmly established, and thus the Church and the State emerged from the social confusion as the two institutions divinely appointed for the government of men.

FIG. 108.—CONSTRUCTIVE SYSTEM OF GOTHIC CHURCH. ILLUSTRATING PRINCIPLES OF ISOLATED SUPPORTS AND BUTTRESSING.

Under these influences ecclesiastical architecture advanced with rapid strides. No longer hampered by monastic restrictions, it called into its service the laity, whose guilds of masons and builders carried from one diocese to another their constantly increasing stores of constructive knowledge. By a wise division of labor each man wrought only such parts as he was specially trained to undertake. The master-builder—bishop, abbot, or mason—seems to have planned only the general arrangement and scheme of the building, leaving the details to be worked out by each craftsman according to his own fancy, the traditions of his craft, or the special exigencies of each case. Thus was produced that remarkable variety in unity of the Gothic cathedrals; thus, also, those singular irregularities and makeshifts, those discrepancies and alterations in the design, which are found in every great work of mediæval architecture. Gothic architecture was constantly changing, attacking new problems or devising new solutions of old ones. In this character of constant flux and development it contrasts strongly with the classic styles, in which the scheme and the principles were early fixed and remained substantially unchanged for centuries.

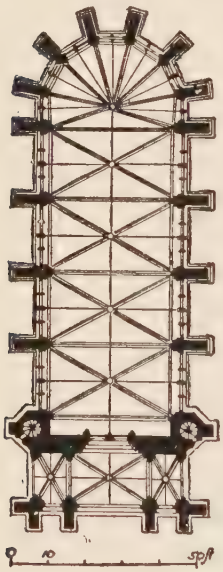


FIG. 109.—PLAN OF SAINTE CHAPELLE, PARIS, SHOWING SUPPRESSION OF SIDE-WALLS.

STRUCTURAL PRINCIPLES. The pointed arch, so commonly regarded as the most characteristic feature of the Gothic styles, was merely an incidental feature of their development. It had long been used in the Orient, and occurs repeatedly in French Romanesque buildings. What was really distinctive of the

Gothic architecture was the systematic application of two principles partially recognized by the Roman and Byzantine builders, but which seem to have been afterward forgotten until they were revived by the later Romanesque architects. The first of these was the *concentration of strains* upon isolated points of support, made possible by the substitution of groined for barrel vaults. This led to a corresponding concentration of the masses of masonry at these points; the building was constructed as if upon legs (Fig. 108). The wall became a mere filling-in between the piers or buttresses, and in time was, indeed, practically suppressed, immense windows filled with stained glass taking its place. This is well illustrated in the **Sainte Chapelle** at Paris, built 1242–47 (Figs. 109, 126). In this remarkable edifice, a series of groined vaults spring from slender shafts built against deep buttresses which receive and resist all the thrusts. The wall-spaces between them are wholly occupied by superb windows filled with stone tracery and stained glass. It would be impossible to combine the materials used more scientifically or effectively. The cathedrals of Gerona (Spain) and of Alby (France; Fig. 120) illustrate the same principle, though in them the buttresses are internal and serve to separate the flanking chapels.

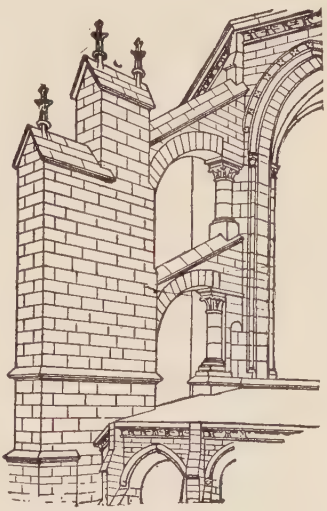


FIG. 110.—EARLY GOTHIC FLYING BUTTRESS.

BUTTRESSES. The second distinctive principle of Gothic architecture was that of *transmitted thrusts*. In Roman build-

ings the thrust of the vaulting was resisted wholly by the inertia of mass in the abutments. In Gothic architecture thrusts were as far as possible resisted by counter-thrusts, and the final resultant pressure was transmitted by flying half-arches across the intervening portions of the structure to external buttresses placed at convenient points. This combination of flying half-arches and buttresses is called the *flying-buttress* (Fig. 110). It reached its highest development in the thirteenth and fourteenth centuries in the cathedrals of central and northern France, and is the one absolutely novel and distinctive feature of the style.

The outer buttresses, at first commonly topped with small gables, were later adorned with pinnacles like small steeples. It has been quite generally stated that these were added to give greater stability to the buttresses by loading them with their added weight. But their small size (except in the one case of Rheims cathedral) negatives this theory, while their position and form suggest a purely decorative purpose in their design.

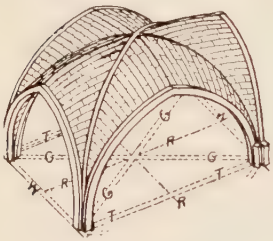


FIG. 111.—FOUR-PART GROINED RIBBED VAULT, FRENCH TYPE WITHOUT RIDGE-RIBS.

G, Groin ribs; T, Transve. ribs; W, Wall ribs; R, Ridges.

RIBBED VAULTING. The two principles of the concentration of strains and of transmitted thrusts formed the structural basis of the style. Their application led to the general adoption of two elements, second only to them in importance, *ribbed vaulting* and the *pointed arch.*

The first of these resulted from the effort to overcome certain practical difficulties encountered in the building of large groined vaults. As ordinarily constructed, a groined vault like that in Fig. 47 must be built as one structure, upon wooden centrings supporting its whole extent. The Romanesque archi-

tects conceived the idea of constructing an independent skeleton of ribs.* Two of these were built against the wall (*wall-ribs*), two across the nave (*transverse ribs*); and two others were made to coincide with the groins (Figs. 101, 111). The *groin-ribs*, intersecting at the centre of the vault, divided each bay into four triangular portions, or *compartments*, each of which was really an independent vault which could be separately constructed upon light centrings supported by the groin-ribs themselves. This principle, though identical in essence with the Roman system of brick skeleton-ribs for concrete vaults, was, in application and detail, superior to it, both from the scientific and artistic point of view. The ribs, richly moulded, became, in the hands of the Gothic architects, important decorative features. In practice the builder gave to each set of ribs independently the curvature he desired. The vaulting-surfaces were then easily twisted or warped so as to fit the various ribs, which, being already in place, served as guides for their construction.

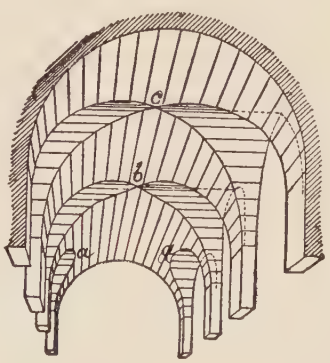


FIG. 112.—PENETRATIONS AND INTERSECTIONS OF VAULTS.

a, a, Penetrations by small semicircular vaults sprung from same level. b, Intersection by small semicircular vault sprung from higher level; groins form wavy lines. c, Intersection by narrow pointed vault sprung from same level; groins are plane curves.

THE POINTED ARCH was adopted to remedy the diffi-

* It has been generally believed that the earliest medieval vault thus constructed is the nave vault of S. Ambrogio at Milan (Fig. 91). But Mr. Porter has discovered an earlier example in the ruins of a church at S. Nazaro in Sesia.

culties encountered in the construction of oblong vaults. It is obvious that where a narrow semi-cylindrical vault intersects a wide one, it produces either what are called *penetrations*, as at *a* (Fig. 112), or intersections like that at *b*, both of which are awkward in aspect and hard to construct. If, however, one or both vaults be given a pointed section, the narrow vault may be made as high as the wide one. It is then possible, with but little warping of the vaulting surfaces, to make them intersect in groins *c*, which are vertical plane curves instead of wavy loops like *a* and *b*.

The Gothic architects availed themselves fully of these two devices. The groin-ribs were commonly semicircular, but the wall-ribs and the transverse ribs were, almost without exception pointed arches, with the apex of each nearly or quite at the level of the groin interesection. The pointed arch, thus introduced as the most convenient form for these ribs, was soon applied to other parts of the structure, especially the windows and pier-arches, which would not otherwise fit well the wall-spaces under the wall-ribs of the nave and aisle vaulting.

FIG. 113.—PLATE-TRACERY, CHARLTON-ON-OXMORE.

This entire system of vaulting constituted the inner roof or stone ceiling of the church. But since it was impossible to make a vault of stone wholly weatherproof, the exterior surface providing numerous pockets in which water, snow and ice were sure to gather, an external protective roof of wood, covered with tile, slate, copper or lead was always built over the vaulting, forming the externally visible high-peaked roof of the church.

TRACERY AND GLASS. With the growth in the size of the windows and the progressive suppression of the lateral walls of vaulted structures, stained glass came more and more generally into use. Its introduction not only resulted in a notable heightening and enriching of the colors and scheme of the interior decoration, but reacted on the architecture, intensifying the very causes which led to its introduction. It stimulated the increase in the size of windows and the suppression of the walls, and contributed greatly to the development of *tracery*. This latter feature was an absolute necessity for the support of the glass. Its evolution can be traced (Figs. 113, 114, 115) from the simple coupling of twin windows under a single hood-mould or discharging arch, to the florid net-work of the fifteenth century. In its earlier forms it consisted merely of decorative openings, circles, and quatrefoils, designed as if pierced through slabs of stone (*plate-tracery*), filling the window-heads over coupled windows. Later attention was bestowed upon the form of the stonework, which was made lighter and richly moulded (*bar-tracery*), rather than upon that of the openings (Fig. 114). Then the circular and geometric patterns employed were abandoned for more flowing and capricious designs (*Flamboyant* tracery, Fig. 115) or (in England) for more rigid

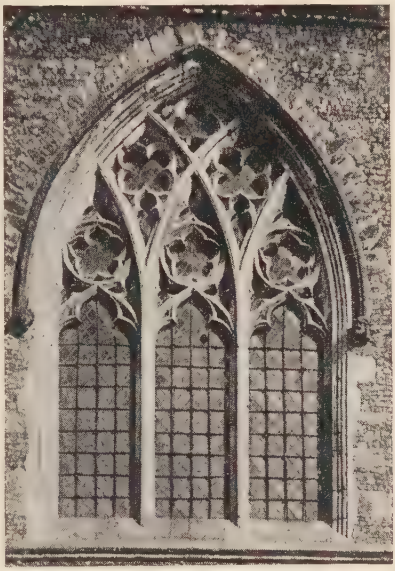


FIG. 114.—BAR-TRACERY, HERNE CHURCH, KENT.

and rectangular arrangements (*Perpendicular*, Fig. 139). It is customary to distinguish the periods and styles of Gothic architecture by the character of the tracery.

CHURCH PLANS. The original basilica-plan underwent radical modifications during the twelfth to fifteenth centuries. These resulted in part from the changes in construction which have been described, and in part from altered ecclesiastical conditions and requirements. Gothic church architecture was based on cathedral design; and the requirements of the cathedral differed in many respects from those of the monastic churches of the preceding period.

FIG. 115.—ROSE WINDOW, CHURCH OF ST. OUEN. ROUEN.

The most important alterations in the plan were in the choir and transepts. The choir was greatly lengthened, the transepts often shortened. The choir was provided with two and often four side-aisles, and one or both of these was commonly carried entirely around the apsidal termination of the choir, forming a single or double *ambulatory*. This combination of choir, apse, and ambulatory was called, in French churches, the *chevet*.

Another advance upon Romanesque models was the multiplication of chapels—a natural consequence of the more popular character of the cathedral as compared with the abbey. Frequently lateral chapels were built at each bay of the side-aisles, filling up the spaces between the deep buttresses, flanking the nave as well as the choir. They were also carried around the

chevet in most of the French cathedrals (Paris, Bourges, Reims, Amiens, Beauvais, and many others); in many of those in Germany (Magdeburg, Cologne, Frauenkirche at Treves), Spain (Toledo, Leon, Barcelona, Segovia, etc.), and Belgium (Tournay, Antwerp). In England the choir had more commonly a square eastward termination. Secondary transepts occur frequently, and these peculiarities, together with the narrowness and great length of most of the plans, make of the English cathedrals a class by themselves.

PROPORTIONS AND COMPOSITION. Along with these modifications of the basilican plan should be noticed a great increase in the height and slenderness of all parts of the structure. The lofty clearstory, the arcaded triforium-passage or gallery beneath it, the high-pointed pier-arches, the multiplication of slender clustered shafts, and the reduction in the area of the piers, gave to the Gothic churches an interior aspect wholly different from that of the simpler, lower, and more massive Romanesque edifices. The perspective effects of the plans thus modified, especially of the complex choir and *chevet* with their lateral and radial chapels, were remarkably enriched and varied.

The exterior was even more radically transformed by these changes, and by the addition of towers and spires to the fronts, and sometimes to the transepts and to their intersection with the nave. The deep buttresses, terminating in pinnacles, the rich traceries of the great lateral windows, the triple portals profusely sculptured, rose windows of great size under the front and transept gables, combined to produce effects of marvellously varied light and shadow, and of complex and elaborate structural beauty, totally unlike the broad simplicity of the Romanesque exteriors.

DECORATIVE DETAIL. The mediæval designers aimed to enrich every constructive feature with the most effective play of lights and shades, and to embody in the decorative detail the

greatest possible amount of allegory and symbolism, and sometimes of humor besides. The deep doorways and pier-arches were moulded with a rich succession of hollow and convex members; and carvings of saints, apostles, martyrs, and angels, virtues, and vices, allegories of reward and punishment, and an extraordinary world of monstrous and grotesque beasts, devils, and goblins filled the capitals and door-arches, peeped over tower-parapets, or leered and grinned from gargoyles and corbels. Another source of decorative detail was the application of tracery like that of the windows to wall-paneling, to balustrades, to open-work gables, to spires, to choir-screens, and other features, especially in the late fourteenth and fifteenth centuries (cathedrals of York, Rouen, Cologne; Henry VII's Chapel, Westminster). And finally in the carving of capitals and the ornamentation of mouldings the artists of the thirteenth century and their successors abandoned completely the classic models and traditions which still survived in the early twelfth century. The later monastic builders began to look directly to nature for

FIG. 116.—FLAMBOYANT DETAIL FROM PULPIT IN STRASBURG CATHEDRAL.

suggestions of decorative form. The lay builders who sculptured the capitals and crockets and finials of the early Gothic cathedrals adopted and followed to its finality this principle of recourse to nature, especially to plant life. At first the budding shoots of early spring were freely imitated or skilfully conventionalized, as being by their thick and vigorous forms the best adapted for translation into stone (Fig. 117). During the thirteenth century the more advanced stages of plant growth, and leaves more complex and detailed, furnished the models for the carver, who displayed his skill in a closer and more literal imitation of their minute veinings and indentations (Fig. 118). This artistic adaptation of natural forms to architectural decoration degenerated later into a minutely realistic copying of natural foliage, in which cleverness of execution took the place of original invention. The spirit of display is characteristic of all late Gothic work. Slenderness, minuteness of detail, extreme complexity and intricacy of design, an unrestrained profusion of decoration covering every surface, a lack of largeness and vigor in the conceptions, are conspicuous traits of Gothic design in the fifteenth century, alike in France, England, Germany, Spain, and the Low Countries. Having worked out to their conclusion the structural principles bequeathed to them by the preceding centuries, the authors of these later works seemed to have devoted themselves to the elaboration of mere decorative detail, and in technical finish surpassed all that had gone before (Fig. 116).

FIG. 117.—EARLY GOTHIC CARVING.

MILITARY ARCHITECTURE. The types of military archi-

tecture developed by the feudal system reached their highest perfection during the thirteenth and fourteenth centuries. The introduction of artillery into warfare on the one hand, and the growth of orderly national governments on the other, undermined during the fifteenth century the whole system of feudal defensive architecture. The castle had been a fortified residence for the lord and his retainers; now its functions were divided between the palace or country-house and the fort, though the city wall was long retained, as an outer defence of the town.

FIG. 118.—CARVING, DECORATED PERIOD, FROM SOUTHWELL MINSTER.

The fully developed feudal castle, like Coucy (1230) or Pierrefonds (1390–1411) in France and Kenilworth or Warwick in England, comprised an outer wall with its moat, towers, drawbridges and gate defended by a barbacan or flanking towers, enclosing an outer court or bailey; a group of fortified residential buildings for lord and garrison, a chapel, and a mighty isolated tower, round or square, called the *donjon* or keep, with walls of prodigious thickness, to serve as a last stronghold if all else were captured. The city wall, sometimes double or even triple, consisted of curtain-walls and towers, those at the angles being larger than the rest, all built with crenellated battlements bracketed out over the wall with apertures between the brackets for dropping missiles on the besiegers. Splendid examples of city walls are preserved in those

of Aigues-Mortes, Avignon and Carcassonne in France, Rothenburg in Germany, Chester in England, and elsewhere. The entire system of feudal fortifications borrowed largely from the late Byzantine system as exhibited at Constantinople, and that of the Moors as shown on both sides of the Mediterranean.

One of the worst acts of German vandalism in the late war was the wanton blowing up of the donjon at Coucy, the most splendid remnant of feudal architecture in Europe.

CHARACTERISTICS SUMMARIZED. In the light of the preceding explanations Gothic architecture may be defined as that style or group of styles which grew up in Europe out of the effort to combine the basilican plan with a systematic vaulted construction in stone. The style and details thus evolved from Romanesque germs were applied to buildings of the most varied type, whether religious or secular, whether vaulted or roofed with wood. Structural logic and the artistic spirit, practical sense and fertility of imagination, united to produce a marvelous series of monuments unrivaled in their kind. While the Greeks, in harmonizing the requirements of utility and beauty in architecture, approached the problem from the æsthetic side, the Gothic architects did the same from the structural side. Their admirably reasoned structures express as perfectly the idea of vastness, mystery, and complexity as do the Greek temples that of simplicity and monumental repose, or Roman buildings that of power superbly organized,

The excellence of Gothic architecture lay not so much in its individual details as in its perfect adaptation to the purposes for which it was developed—its triumphs were achieved in the building of cathedrals and large churches. In the domain of civil and domestic architecture it produced nothing comparable with its ecclesiastical edifices, because it was the requirements of the cathedral and not of the palace, town-hall, or dwelling, that gave it its form and character.

PERIODS. The history of Gothic architecture is commonly

divided into three periods, chiefly distinguished by the character of the window-tracery. This division is, however, somewhat arbitrary, like all efforts to cut the history of architectural development into definite slices. The various phases even of tracery-design were not reached at the same time in different parts even of one country, nor did the movement in this field of design coincide exactly with that in any other. It is, nevertheless, often convenient to group the works of the style into broadly indicated periods in which certain characteristics dominate; and the commonly recognized periods are therefore here given, with a summary of the characteristics of each.

Early Pointed Period. [*Early French; Early English* or *Lancet* Period in England; *Early German*, etc.] Simple ribbed vaults; general simplicity and vigor of design and detail; conventionalized foliage of small plants; plate-tracery, and narrow windows coupled under pointed arch with circular foiled openings in the window-head. (In France, 1160 to 1250.)

Middle Pointed Period. (*Rayonnant* in France; *Decorated* or *Geometric* in England.] Vaults more perfect; in England multiple ribs and liernes; greater slenderness and loftiness of proportions; decoration much richer, less vigorous; more naturalistic carving of mature foliage; walls nearly suppressed, windows of great size, bar-tracery with slender moulded mullions and geometric combinations (circles and cusps) in window-heads, circular (rose) windows. (In France, 1250 to 1375.)

Florid Gothic Period. [*Flamboyant* in France; *Perpendicular* in England.] Vaults of varied and richly decorated design; fan-vaulting and pendants in England, vault-ribs curved into fanciful patterns in Germany and Spain; profuse and minute decoration and cleverness of technical execution substituted for dignity of design; highly realistic carving and sculpture, flowing or flamboyant tracery in France; perpendicular bars with horizontal transoms and four-centred arches in England; "branch tracery" in Germany. (In France, 1375 to 1525.)

CHAPTER XVI

GOTHIC ARCHITECTURE IN FRANCE

BOOKS RECOMMENDED: As before, Adamy, Dehio and Bezold, Enlart, Hasak, Jackson, Moore, Porter, Reber, Viollet-le-Duc.* Also *Archives de la commission des monuments.* Chapuy, *Le moyen age monumental.* Chateau, *Histoire et caractères de l'architecture française.* Gonse, *L'Art gothique.* Huss, *Rational Building* (tr. from V.-le-Duc). King, *The Study Book of Mediæval Architecture and Art.* Lassus and Viollet-le-Duc, *Notre Dame de Paris.* Mâle, *L'Art religieux en France au XIIIe siècle.* Nesfield, *Specimens of Mediæval Architecture.* Pettit, *Architectural Studies in France.* Verdier et Cattois, *Architecture civile et domestique.*

CATHEDRAL-BUILDING IN FRANCE. In the development of the principles outlined in the foregoing chapter the church builders of France led the way. They surpassed all their contemporaries in readiness of invention, in quickness and directness of reasoning, and in artistic refinement. These qualities were especially manifested in the extraordinary architectural activity which marked the second half of the twelfth century and the first half of the thirteenth. This was the great age of cathedral-building in France. The adhesion of the bishops to the royal cause, and their position in popular estimation as the champions of justice and human rights, led to the rapid recovery by the episcopacy of its ancient power and influence. The cathedral, as the throne-church of the bishop, became a

* Consult especially articles ARCHITECTURE, CATHÉDRALE, CHAPELLE, CONSTRUCTION, ÉGLISE, MAISON, VOÛTE.

truly popular institution. New cathedrals were founded on every side, especially in the Royal Domain and the adjoining provinces of Normandy, Burgundy, and Champagne, and their construction was warmly seconded by the people, the communes, and the municipalities. "Nothing to-day," says Viollet-le-Duc,* "unless it be the commercial movement which has covered Europe with railway lines, can give an idea of the zeal with which the urban populations set about building cathedrals; . . . a necessity at the end of the twelfth century because it was an energetic protest against feudalism." The collapse of the unscientific Romanesque vaulting of some of the earlier cathedrals and the destruction by fire of others stimulated this movement by the necessity for their immediate rebuilding. The entire reconstruction of the cathedrals of Bayeux, Bayonne, Cambray, Evreux, Laon, Lisieux, Le Mans, Noyon, Poitiers, Senlis, Soissons, and Troyes was begun between 1130 and 1200.† The cathedrals of Bourges, Chartres, Paris, and Tours, and the royal abbey of St. Denis, all of the first importance, were begun during the same period, and during the next quarter-century those of Amiens, Auxerre, Rouen, Reims, Séez, and many others. After 1250 the movement slackened and finally ceased. Few important cathedrals were erected during the latter half of the thirteenth century, the chief among them being at Beauvais (actually begun 1247), Clermont, Coutances, Limoges, Narbonne, and Rodez. During this period, and through the fourteenth and fifteenth centuries, French architecture was concerned rather with the completion and remodeling of existing cathedrals than the founding of new ones. There were, however, many important parish churches and civil or domestic edifices erected within this period.

* *Dictionnaire raisonné de l'architecture française*, vol. ii, pp. 280, 381.

† See Ferree, *Chronology of Cathedral Churches of France.*

PLANS. The most radical change from the primitive basilican type was, as already explained in the last chapter, the continuation of the side-aisles around the apse to form an ambulatory, and with the addition of chapels between the radiating apse buttresses, a *chevet* (Fig. 119). These may have originated in the apsidal chapels of Romanesque churches in Auvergne and the South, as at Issoire, Clermont-Ferrand, Le Puy, and Toulouse. They generally superseded the transept-chapels of earlier churches, and added greatly to the beauty of the interior perspective, especially when the encircling aisles of the chevet were doubled. Notre Dame had at first a double ambulatory without chapels, these being added later. Bourges has only five very small semicircular chapels. Chartres (choir 1198) and Le Mans as reconstructed between 1217 and 1254, have double ambulatories and radial chapels. After 1220 the second ambulatory no longer appears. Noyon, Soissons, Reims, Amiens, Troyes, and Beauvais, Tours, Bayeux, and Coutances, Clermont, Limoges, and Narbonne all have the single ambulatory and radiating chevet-chapels. The Lady-chapel in the axis of the church was often made longer and more important than the other chapels, as at Amiens, Le Mans, Rouen, Bayeux, and Coutances. Chapels also flanked the choir in most of the cathedrals named above, and Notre Dame, Alby, Laon, and Tours also have side chapels to the nave. These are of late date; those of Notre Dame, 1300–1320. The only cathedrals with complete double side-aisles alike to nave, choir,

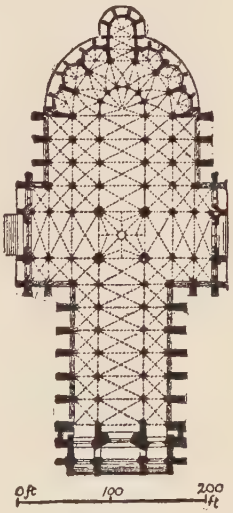


FIG. 119.—PLAN OF AMIENS CATHEDRAL.

and chevet, were Notre Dame and Bourges. It is somewhat singular that the German cathedral of Cologne is the only one in which all these various characteristic French features were united in one design (see Fig. 144).

Local considerations had full sway in France, in spite of the tendency toward unity of type. Thus Dôl, Laon, and Poitiers have square eastward terminations; Chalons has no ambulatory; Bourges no transept. In Notre Dame the transept was almost suppressed. At Soissons one transept, at Noyon both, have semicircular ends. **Alby,** a late cathedral of brick, founded in 1280 but mostly built during the fourteenth century, has neither side-aisles nor transepts, its wide nave being flanked by chapels separated by internal buttresses (Fig. 120).

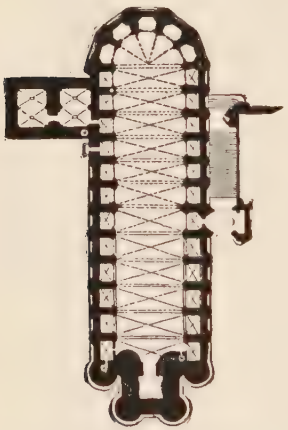


FIG. 120.—PLAN OF CATHEDRAL OF ALBY.

EARLY STRUCTURAL DEVELOPMENT. By the middle of the twelfth century the use of barrel-vaulting over the nave had been generally abandoned and groined vaulting with its isolated points of support and resistance had taken its place. The timid experiments of the Clunisian architects at Vézelay in the use of the pointed arch and vault-ribs also led, in the second half of the twelfth century, to far-reaching results. The builders of the great **Abbey Church** of **St. Denis,** near Paris, begun in 1140 by the Abbot Suger, appear to have been the first to develop these tentative devices into a system. In the original choir of this noble church all the arches, alike of the vault-ribs (except the groin-ribs, which were semicircles) and of the openings, were pointed and the

vaults were throughout constructed with cross-ribs, wall-ribs, and groin-ribs. Of this early work only the chapels remain. In other contemporary monuments, as for instance in the cathedral of Sens, the adoption of these devices was only partial and hesitating.

NOTRE DAME AT PARIS. The next great step in advance was taken in the cathedral of **Notre Dame*** at Paris (Figs. 119, 120, 128). This was begun under Maurice de Sully in 1163, on the site of the twin cathedrals of Ste. Marie and St. Etienne, and the choir was, as usual, the first portion erected. By 1196 the choir, transepts, and one or two bays of the nave, and by 1235 the entire nave and west front, were finished. The completeness, harmony, and vigor of conception of this remarkable church contrast strikingly with the makeshifts and hesitancy displayed in many contemporary monuments in other provinces. The difficult vaulting over the radiating bays of the double ambulatory was here treated with great elegance. By increasing the number of supports successively in the exterior circuit of each aisle (Fig. 121) each trapezoidal bay of the vaulting was divided into three or five easily managed triangular compartments. Circular shafts were used between the central and side aisles. The side aisles were doubled and those next the centre were built in two

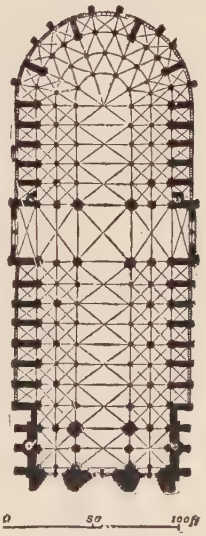


FIG. 121.—PLAN OF NOTRE DAME, PARIS.

* This cathedral will be hereafter referred to, for the sake of brevity, by the name of *Notre Dame*. Other cathedrals having the same name will be distinguished by the addition of the name of the city, as "Notre Dame at Châlons-sur-Marne."

stories, providing ample galleries behind a very open triforium. The nave was unusually lofty and covered with six-part vaults of admirable execution. The vault-ribs were vigorously moulded and made to spring from distinct vaulting-shafts, of which three rested upon the cap of each of the massive piers below (Fig. 120). The **Cathedral of Bourges,** begun 1190, closely resembled that of Paris in plan. Both were designed to accommodate vast throngs in their exceptionally broad central aisles and double side aisles, but Bourges has no side-aisle galleries, though the inner aisles are much loftier than the outer ones. Though later in date the vaulting of Bourges is inferior to that of Notre Dame, especially in the treatment of the trapezoidal bays of the ambulatory. Both have six-part vaults over the nave.

FIG. 122.—INTERIOR OF NOTRE DAME, PARIS.

The masterly examples set by the vault-builders of St. Denis and Notre Dame were not at once generally followed. Noyon, Senlis, and Soissons, contemporary with these, are far less completely Gothic in style. At **Le Mans** the groined vaulting of the cathedral, erected in 1158, is singularly primitive and heavy, although nearly contemporary with that of Notre Dame (Fig. 123).

DOMICAL GROINED VAULTING. The builders of the South and West, influenced by Aquitanian models, adhered to the square plan and domical form of vaulting-bay, even

after they had begun to employ groin-ribs. The latter, as at first used by them in imitation of Northern examples, had no organic function in the vault, which was still built like a dome. About 1145–1160 the cathedral of **St. Maurice** at **Angers** was vaulted with square, groin - ribbed vaults, domical in form but not in construction. The joints no longer described horizontal circles as in a dome, but oblique lines perpendicular in the groins and meeting in zig-zag lines at the ridge (Fig. 124). This method became common in the West and was afterward generally adopted by the English architects. The **Cathedrals of Poitiers** (1162) and **Laval** (La Trinité, 1180–1185) are examples of this system, which at Le Mans met with the Northern system and produced in the cathedral the awkward compromise described above.

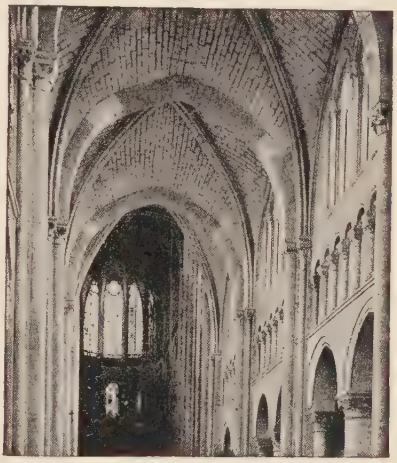


FIG. 123.—LE MANS CATHEDRAL, NAVE.

VAULTING ON OBLONG BAYS. Early in the thirteenth century the church-builders of Northern France abandoned the use of square vaulting-bays and six-part vaults. By the adoption of groin-ribs and the pointed arch, the building of vaults in oblong bays was greatly simplified. Each bay of the nave received its own complete vault, thus doing away with all necessity for alternately light and heavy piers. It is not quite certain when and where this system was first adopted for the complete vaulting of a church. It is, however, probable

that the **Cathedral** of **Chartres,** begun in 1194* and completed before 1240, deserves this distinction, although it is possible that the vaults of Soissons and Noyon may slightly antedate it. **Troyes** (1214–1267), **Rouen** (1202–1220), **Reims** (1212–1242), **Auxerre** (1215–1234, nave fourteenth century), **Amiens** (1220–1288), and nearly all the great churches and chapels begun after 1200, employ the fully developed oblong vault.

BUTTRESSING. Meanwhile the increasing height of the clearstories and the use of double aisles compelled the bestowal of especial attention upon the buttressing. The nave and choir of Chartres, the choirs of Notre Dame, Bourges, Rouen, and Reims, the chevet and later the choir of St. Denis, afford early examples of the flying - buttress (Fig. 110). These were at first simple and of moderate height. Single half-arches spanned the side aisles; in Notre Dame they crossed the double aisles in a single leap. An intermediate range of buttresses and pinnacles was built over the intermediate piers where double aisles flanked the nave and choir, thus dividing the single flying arch into two arches. At the same time a careful observation of statical defects in the earlier examples led to the introduction of double arches and of other devices to stiffen and to beautify the whole system. At **Reims** and **Amiens**

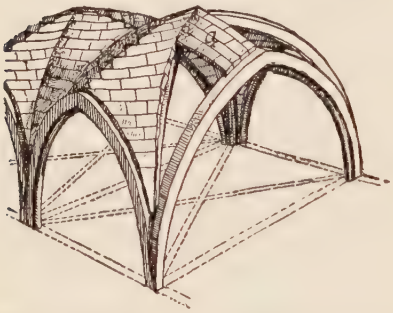


FIG. 124.—GROINED VAULT WITH ZIG-ZAG RIDGE JOINTS.

a shows a small section of filling with courses parallel to the ridge, for comparison with the other compartments.

* Except W. front and S. W. tower, retained from earlier building of 1145-1170.

these features received their highest development, though later examples are frequently much more ornate.

INTERIOR DESIGN. The progressive change outlined in the last chapter, by which the wall was practically suppressed, the windows correspondingly enlarged, and every part of the structure made loftier and more slender, resulted in the evolution of a system of interior design well represented by the nave of Amiens. The second story or gallery over the side aisle disappeared, but the aisle itself was very high. The triforium was no longer a gallery, but a richly arcaded passage in the thickness of the wall, corresponding to the roofing-space over the aisle, and generally treated like a lower stage of the clearstory. Nearly the whole space above it was occupied in each bay by the vast clearstory window filled with simple but effective geometric tracery over slender mullions. The side aisles were lighted by windows which, like those in the clearstory, occupied nearly the whole available wall-space under the vaulting. The piers and shafts were all clustered and remarkably slender. The whole construction of this vast edifice, which covers nearly eighty thousand square feet, is a marvel of lightness, of scientific combinations, and of fine execution. Its great vault rises to a height of one hundred and forty feet. The nave of St. Denis, though less lofty, resembles it closely in style (Fig. 125). Earlier cathedrals show less of the harmony of proportion, the perfect working out of the relation of all parts of the composition of each bay, so con-

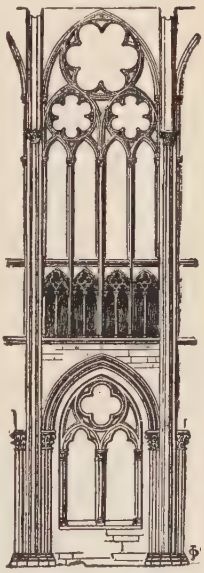


FIG. 125.—ONE BAY, ABBEY OF ST. DENIS.

spicuous in the Amiens type, which was followed in most of the later churches.

WINDOWS: TRACERY. The clearstory windows of Noyon, Soissons, Sens, and the choir of Vézelay (1200) were simple arched openings arranged singly, in pairs, or in threes. In the cathedral of Chartres (1194–1220) they consist of two arched windows with a circle above them, forming a sort of plate tracery under a single arch. In the chapel windows of the choir at Reims (1215) the tracery of mullions and circles was moulded inside and out, and the intermediate triangular spaces all pierced and glazed. Rose windows were early used in front and transept façades. During the thirteenth and fourteenth centuries they were made of vast size and great lightness of tracery, as in the transepts of Notre Dame (1257) and the west front of Amiens (1288). From the design of these windows is derived the name *Rayonnant*, often applied to the French Gothic style of the period 1250–1375.

FIG. 126.—THE SAINTE CHAPELLE, PARIS.

THE SAINTE CHAPELLE. In this beautiful royal chapel at Paris, built 1242–47, Gothic design was admirably exemplified in the noble windows 15 by 50 feet in size. Each was divided by slender mullions into four lancet-like lights gathered under

the rich tracery of the window-head. They were filled with stained glass of the most brilliant but harmonious hues. They occupy the whole available wall-space, so that the ribbed vault internally seems almost to rest on walls of glass, so slender are the visible supports and so effaced by the glow of color in the windows. Certainly lightness of construction and the suppression of the wall-masonry could hardly be carried further than here (Figs. 109, 126). Among other chapels of the same type are those in the palace of St. Germain-en-Laye (1240), the Lady Chapel of St. Germer cathedral, and a later example in the château of Vincennes, begun by Charles VI, but not finished till 1525.

SCALE. The French cathedrals were nearly all of imposing dimensions. Noyon, one of the smallest, is 333 feet long; Sens measures 354. Laon, Bourges, Troyes, Notre Dame, Le Mans, Rouen, and Chartres vary from 396 to 437 feet in extreme length; Reims measures 483, and Amiens, 478 feet. Notre Dame is 124 feet wide across the five aisles of the nave; Bourges, somewhat wider. The central aisles of these two cathedrals, and of Laon, Amiens, and Beauvais, have a span of not far from 40 feet from centre to centre of the piers; while the ridge of the vaulting, which in Notre Dame is 108 feet above the pavement, and in Bourges 125, reaches in Amiens a height of 140 feet, and of 152 in Beauvais. This emphasis of the height, from 3 to $3\frac{1}{2}$ times the clear width of the nave or choir, is one of the most striking features of the French cathedrals. It produces an impressive effect, but tends to dwarf the great width of the central aisle.

EXTERIOR DESIGN. Here, as in the interior, every feature had its constructive *raison d'être,* and the total effect was determined by the fundamental structural scheme. This was especially true of the lateral elevations, in which the pinnacled buttresses, the flying arches, and the traceried windows of the side-aisle and clearstory, repeated uniformly at each bay, were

the principal elements of the design. The transept façades and main front allowed greater scope for invention and fancy, but even here the interior membering gave the key to the composition. Strong buttresses marked the division of the aisles and resisted the thrust of the terminal pier arches, and rose windows filled the greater part of the wall space under the end of the lofty vaulting. The whole structure was crowned by a steep-pitched roof of wood, covered with lead, copper, or tiles, to protect the vault from damage by snow and moisture. This roof occasioned the steep gables which crowned the transept façades. The main front was frequently adorned, above the triple portal, with a gallery of niches or tabernacles filled with statues of kings, and the end of the roof above masked by an arcade. Different types of composition are represented by Chartres, Notre Dame, Amiens, Reims, and Rouen, of which Notre Dame (Fig. 127), Amiens, and Reims are perhaps the finest. Notre Dame is especially remarkable for its stately simplicity and the even balancing of horizontal and vertical elements.

FIG. 127.—WEST FRONT OF NOTRE DAME, PARIS.

PORCHES. In most French church façades the porches were

the most striking features, with their deep shadows and sculptured arches. The Romanesque porches were usually limited in depth to the thickness of the front wall. The Gothic builders secured increased depth by projecting the portals out beyond the wall, and crowned them with elaborate gables. The wide central door was divided in two by a pier adorned with a niche

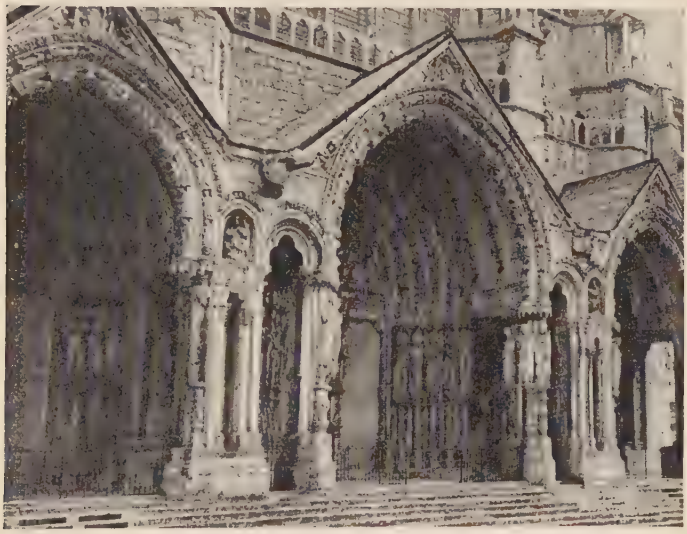


FIG. 128.—NORTH TRANSEPT PORCH OF CHARTRES CATHEDRAL.

and statue. Over this the tympanum of the arch was carved with scriptural reliefs; the jambs and arches were profusely adorned with figures of saints, apostles, martyrs, and angels, under elaborate canopies. The porches of Laon, Bourges, Amiens, and Reims are especially deep and majestic in effect, the last-named (completed 1380) being the richest of all. Some of the transept façades also had imposing portals. Those of **Chartres** (1210–1245) rank among the finest work of Gothic decorative architecture. The portals of the fifteenth and early

sixteenth centuries were remarkable for the extraordinary richness of their decorative tracery, as at Abbeville, Alençon, the cathedral and St. Maclou at Rouen (Fig. 131), Tours, Troyes, Vendôme, etc.

TOWERS AND SPIRES. The emphasizing of vertical elements reached its fullest expression in the towers and spires of the churches. What had been at first merely a lofty belfry roof was rapidly developed into the spire, rising three hundred feet or more into the air. This development had already made progress in the Romanesque period, and the south spire of Chartres is a notable example of twelfth-century steeple design. The transition from the square tower to the octagonal pyramid was skilfully effected by means of corner pinnacles and dormers. After 1200 the development was in the direction of richness and complexity of detail, rather than of radical constructive modification. The northern spire of Chartres (1515) and the spires of Bordeaux, Coutances, Senlis, and the Flamboyant church of St. Maclou at Rouen, illustrate this development. In Normandy central spires were common, rising over the crossing of nave and transepts. In some case; the designers of cathedrals contemplated a group of towerss this is evident at Chartres, Coutances, Laon, and Reims. This intention was, however, never realized; it demanded resources beyond even the enthusiasm of the thirteenth century. Only in rare instances were the spires of any of the towers completed, and the majority of the French towers have square terminations, with low-pitched wooden roofs, generally invisible from below. In general, French towers are marked by their strong buttresses, solid lower stories, huge twin windows in each side of the belfry proper, and a skilful management of the transition to an octagonal plan for the belfry or the spire.

CARVING AND SCULPTURE. The general superiority of French Gothic work was fully maintained in its decorative

details. Especially fine is the figure sculpture, which in the thirteenth and fourteenth centuries attained true nobility of expression, combined with great truthfulness and delicacy of execution. Some of its finest productions are found in the great doorway jambs of the west portals of the cathedrals, and in the ranks of throned and adoring angels which adorned their deep arches. These reach their highest beauty in the portals of Reims (1260). The *tabernacles* or carved niches in

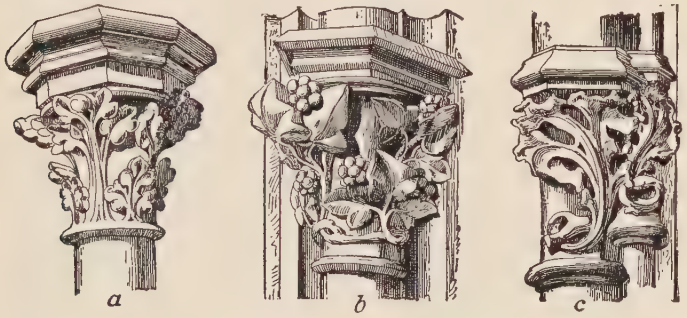


FIG. 129.—FRENCH GOTHIC CAPITALS.

a, From Sainte Chapelle, Paris, 13th century. *b*, 14th-century capital from transept of Notre Dame, Paris. *c*, 15th-century capital from north spire of Chartres.

which such statues were set were important elements in the decoration of the exteriors of churches.

Foliage forms were used for nearly all the minor carved ornaments, though grotesque and human figures sometimes took their place. The gargoyles through which the roofwater was discharged clear of the building were almost always composed in the forms of hideous monsters; and symbolic beasts, like the oxen in the towers of Laon, or monsters like those which peer from the tower balustrades of Notre Dame, were employed with some mystical significance in various parts of the building. But the capitals, corbels, crockets, and finials were mostly composed of floral or foliage forms. Those of

the twelfth and early thirteenth centuries were for the most part simple in mass, and crisp and vigorous in design, imitating the strong shoots of early spring. The **capitals** were tall and slender, concave in profile, with heavy square or octagonal abaci. After the middle of the thirteenth century the carving became more realistic; the leaves, larger and more mature, were treated as if applied to the capital or moulding, not as if they grew out of it. The execution and detail were finer and more delicate, in harmony with the increasing slenderness and lightness of the architecture (Fig. 129 *a*, *b*). **Tracery forms** now began to be profusely applied to all manner of surfaces, and open-work gables, wholly unnecessary from the structural point of view, but highly effective as decorations, adorned the portals and crowned the windows.

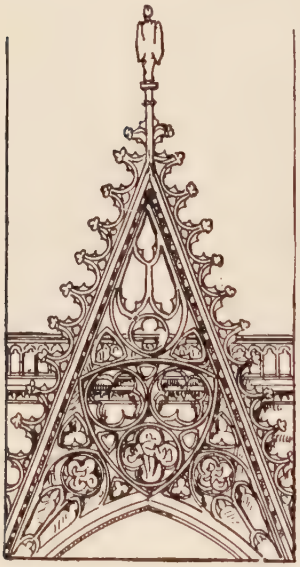


FIG. 130.—OPENWORK GABLE, FROM N. TRANSEPT OF ROUEN CATHEDRAL.

LATE GOTHIC MONUMENTS. So far our attention has been mainly occupied with the masterpieces erected previous to 1250. Among the cathedrals, relatively few in number, whose construction is referable to the second half of the century, that of **Beauvais** stands first in importance. Begun on a colossal scale in 1247, the choir and chapels were not completed until 1270. But the collapse in 1284 of the central tower and excessively lofty vaulting of this cathedral, which still lacked the nave, compelled its entire reconstruction, the number of the piers being

doubled and the span of the pier arches correspondingly reduced. As thus rebuilt, the central aisle was 51 feet wide from centre to centre of opposite piers, and 152 feet high to the top of the vault. Transepts were added after 1500. **Limoges** and **Narbonne,** begun in 1272 on a large scale (though not

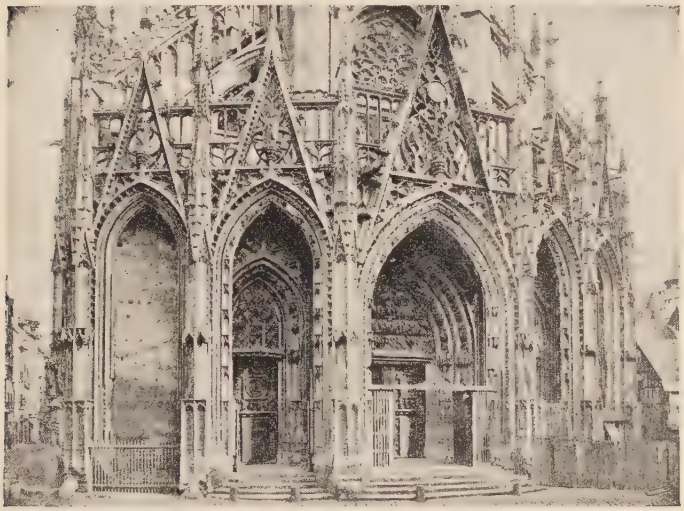


FIG. 131.—WEST FRONT OF ST. MACLOU, ROUEN.

equal in size to Beauvais), were likewise never completed. Both had choirs of admirable plan with well-designed chevet-chapels. Many other cathedrals begun during this period were completed only after long delays, as, for instance, Meaux, Rodez (1277), Toulouse (1272), and Alby (1282), finished in the sixteenth century, and Clermont (1248), completed under Napoleon III. But between 1260 or 1275 and 1350 work was actively prosecuted on many still incomplete cathedrals. The choirs of Beauvais (rebuilding), Limoges, and Narbonne

were finished after 1330; and towers, transept-façades, portals, and chapels added to many others of earlier date.

The style of this period is sometimes designated as **Rayonnant,** from the characteristic wheel tracery of the rose windows, and the prevalence of circular forms in the lateral arched windows of the late thirteenth and early fourteenth centuries. The great rose windows in the transepts of Notre Dame, dating from 1257, are typical examples of the style. Those of Rouen cathedral belong to the same category, though of later date. The façade of Amiens, completed by 1288, is one of the finest works of this style, of which an early example is the elaborate parish church of **St. Urbain** at Troyes.

THE FLAMBOYANT STYLE. The geometric treatment of the tracery and the profuse decoration of this period gradually merged into the decorative intricacies of the **Flamboyant** style, which prevailed until the advent of the Renaissance—say 1525. The continuous logical development of forms ceased, and in its place a tendency towards a sometimes excessive richness of detail controlled the arts of design. The finest monument of this long period is the fifteenth-century nave and central tower of the church of **St. Ouen** at Rouen, an abbey of the first rank, begun in 1318, but not finished until 1515. The tracery of the lateral windows is still chiefly geometric, but the western rose window (Fig. 115) and the magnificent central tower or lantern exhibit in their tracery the florid decoration and wavy, flame-like lines of this style. Slenderness of supports and the suppression of horizontal lines are here carried to an extreme; and the church, in spite of its great elegance of detail, lacks the vital interest and charm of the earlier Gothic churches. The cathedral of Alençon and the beautiful church of **St. Maclou** at Rouen have portals with unusually elaborate detail of tracery and carving; while the unfinished façade of Rouen cathedral (1509) surpasses all other examples in the lace-like minuteness of its open-work and its

profusion of ornament. The churches of **St. Jacques** at Dieppe, of St. Pierre at Louviers, and of **St. Wulfrand** at Abbeville, and the façades of Tours and Troyes, are among the masterpieces of the style. The upper part of the façade of Reims (1380–1428) belongs to the transition from the Rayonnant to the Flamboyant. While some works of this period are conspicuous for the richness of their ornamentation, others are noticeably bare and poor in design, like St. Merri and St. Séverin in Paris. The most successful examples of this period are rather its minor than its major undertakings: altars, tombs, choir-screens, portals and spires, choir-stalls and pulpits, often executed in parish churches or chapels; *e.g.*, the church of Brou at Bourg-en-Bresse, the chapel of St. Esprit at Rue, Ste. Madeleine at Troyes, etc.

SECULAR AND MONASTIC ARCHITECTURE. The building of cathedrals did not absorb all the architectural activity of the French during the Gothic period, not did it by any means put an end to monastic building. While there are few Gothic cloisters to equal the Romanesque cloisters of Puy-en-Vélay, Arles, Elne, and Moissac, many of the abbeys either rebuilt their churches in the Gothic style after 1150, or extended and remodelled their conventual buildings. The cloisters of Fontfroide, Chaise-Dieu, and the Mont St. Michel rival those of Romanesque times, while many new refectories and chapels were built in the same style with the cathedrals. The most complete of these Gothic monastic establishments, that of the **Mont St. Michel** in Normandy, presents a remarkable aggregation of buildings clustering around the steep isolated rock on which stands the abbey church, built in the eleventh century (choir and chapels remodelled in the sixteenth). The great refectory and dormitory, the "Hall of the Knights," cloisters and chapels, built in several vaulted stories against the cliffs, are admirable examples of the vigorous pointed-arch design of the early thirteenth century.

Hospitals like that of St. Jean at Angers (late twelfth century), or those of Chartres, Ourscamps, Tonnerre, and Beaune, illustrate how skilfully the French could modify and adapt the details of their architecture to the special requirements of civil architecture. Great numbers of charitable institutions were built in the middle ages, but few of those in France are now extant. The florid sixteenth-century **Palais de Justice** at **Rouen** (1499–1508) is an example of another branch of secular Gothic architecture. In all these monuments the adaptation of means to ends is admirable. Wooden ceilings and roofs replaced stone, wherever required by great width of span or economy of construction. There was little sculpture; the wall-spaces were not suppressed in favor of stained glass and tracery; while the roofs were usually emphasized and adorned with elaborate crestings and finials in lead or terra-cotta.

The strongly organized feudalism of France militated against any great development of municipal architecture, but there are a few interesting town-halls of the fifteenth and early sixteenth centuries. The finest of these at **Arras,** in French Flanders, was destroyed in the recent war. Those of Noyon (1485–1523) and Compiègne (1500) are the most notable; others are at St. Quentin, Niort, Bourges and Douai.

DOMESTIC ARCHITECTURE. These same principles controlled the designing of houses, farm buildings, barns, granaries, and the like. The common closely-built French city house of the twelfth and thirteenth century is illustrated by many extant examples at Cluny, Provins, and other towns. A shop opening on the street by a large arch, a narrow stairway, and two or three stories of rooms lighted by clustered, pointed-arched windows, constituted the common type. The street front was usually gabled and the roof steep. In the fourteenth or fifteenth century half-timbered construction began to supersede stone for town houses, as it permitted of encroaching upon the street by projecting the upper stories.

Many of the half-timbered houses of the fifteenth century were of elaborate design. The heavy oaken uprights were carved with slender colonnettes; the horizontal sills, bracketed out over the street, were richly moulded; picturesque dormers broke the sky-line, and the masonry filling between the beams was frequently faced with enamelled tiles.

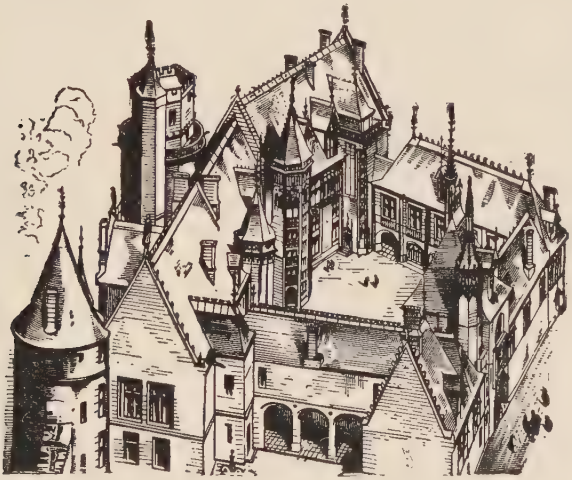


FIG. 132.—HOUSE OF JACQUES CŒUR, BOURGES.
(After Viollet-le-Duc.)

The more considerable houses or palaces of royalty, nobles, archbishops, and wealthy citizens rivalled, and in time surpassed, the monastic buildings in richness and splendor. By 1400, the increasing ascendancy of the royal power and more settled conditions permitted the erection in the larger cities of residences for the nobility, more comfortable and less frowning than the fortified castles of the feudal régime.

The type is well represented by the Ducal Palace at Nancy (1476), the **Hôtel de Cluny** (1485), at Paris, the **Hôtel Jacques Cœur** at Bourges (Fig. 132), and the east wing of Blois (1498–

1515). These palaces are elaborately planned, with large halls, many staircases, and handsome courts; they are also extremely picturesque with their square and circular towers, slender turrets, elaborate dormers, and rich carved detail.

DESTRUCTION OF MONUMENTS. The recent war has wrought terrible havoc among the mediæval monuments of northern France. Reims Cathedral is in ruins, though the façade is almost intact, and repair and reconstruction of the choir are possible, owing to its very solid construction. Soissons Cathedral is ruined beyond repair. Noyon Cathedral was badly damaged in places, but not wrecked. The Hôtel-de Ville of Arras, partly late Gothic, partly of the Renaissance, the finest example of its kind in France, was totally destroyed. The late Gothic church of St. Gervais at Paris was partly wrecked by a shell through the roof. The destruction of smaller churches in the villages and cities of Artois and French Flanders was frightful, and the complete record of the havoc among historic monuments is not yet available.

MONUMENTS not specially mentioned in text. (C. = cathedral; A. = abbey; trans. = transept; each edifice is given under the date of its commencement; subsequent alterations in parentheses). Between 1130 and 1200: Vézelay A., ante-chapel, 1130; St. Germer-de-Fly C., 1130-1150 (chapel later); Sens C., 1140-68 (W. front, 13th century; chapels, spire, 14th); Senlis C., 1145-83 (trans., spire, 13th century); Noyon C., 1149-1200 (W. front, vaults, 13th century); St. Germain-des-Prés A., Paris, choir, 1150 (Romanesque nave); Langres, 1150-1200; Laon C., 1150-1200; Soissons C., 1160-70 (choir, 1212; nave chapels, 14th century); Tours C., 1170 (rebuilt, 1267; trans. portals, 1375; W. portals, chapels, 15th century; towers finished, 1507-47); Mantes, church Notre Dame, 1180-1200; St. Nicholas at Caen, 1190 (vaults, 15th century); Reims, church St. Rémy, choir, end of 12th century (Romanesque nave); church St. Leu d'Esserent, choir late 12th century (nave, 13th century); Lyons C., choir, end of 12th century (nave, 13th and 14th centuries); Étampes, church Notre Dame, 12th and 13th centuries.—13th century: Evreux C., 1202-75 (trans., central tower, 1417; W. front rebuilt, 16th century);

Névers, 1211, N. portal, 1280 (chapels, S. portal, 15th century); Bayonne C., 1213 (nave, vaults, W. portal, 14th century); Auxerre C., 1215-34 (nave, W. end, trans., 14th century); St. Etienne at Châlons-sur-Marne, 1230 (spire, 1520); Séez C., 1230, rebuilt 1260 (remodelled 14th century); Notre Dame de Dijon, 1230; Reims, Lady chapel of Archbishop's palace, 1230; Chapel Royal at St. Germain-en-Laye, 1240; Coutances C., 1254-74; Beauvais C., 1247-72 (rebuilt 1337-47; trans. portals, 1500-48); Notre Dame de Grace at Clermont, 1248 (finished 1350); Dôl C., 13th century; St. Martin-des-Champs at Paris, nave 13th century (choir Romanesque); Bordeaux C., 1260; St. Urbain, Troyes, 1264; Rodez C., 1277-1385 (altered, completed 16th century); church St. Quentin, 1280-1300; St. Bénigne at Dijon, rebuilt 1280-91; Meaux C., mainly rebuilt 1284 (W. end much altered 15th, finished 16th century); Cahors C., rebuilt 1285-93 (W. front 15th century); Orléans, 1287-1328 (burned, rebuilt 1601-1829).—14th century: St. Bertrand de Comminges, 1304-50; St. Nazaire at Carcassonne, choir and trans. on Romanesque nave; Montpellier C., 1364; Royal Chapel at Vincennes, 1385-1525.—15th and 16th century: St. Nizier at Lyons rebuilt; St. Séverin, St. Merri, St. Germain l'Auxerrois, St. Gervais, all at Paris; Notre Dame de l'Épine at Chalons-sur-Marne; choir of St. Étienne at Beauvais; Saintes C., rebuilt, 1450; church of Brou at Bourg-en-Bresse; abbey of St. Riquier —these two early 16th century.

Houses, Castles, and Palaces: Gothic houses at Reims, Perigueux, St. Yrieix; Bishop's palace at Paris, 1160 (demolished), and Angers; Louvre at Paris (the original château), 1225-1350; Palais de Justice at Paris, originally the royal residence, 1225-1400; Bishop's palace at Laon, 1245 (addition to Romanesque hall); castle Montargis, 13th century; castle Pierrefonds, 1390-1411, remodelled 1857; Bishop's palace at Narbonne, palace of Popes at Avignon, castle Bourbon l'Archambault—all 14th century; donjon of palace at Poitiers, 1395; Pal. de Justice (Salle de la Prévôté, Salle des Comtes), Poitiers, 12th-15th century; Hôtel des Ambassadeurs at Dijon, 1420; castles of Creil and Châteaudun, late 15th century. Hôtels-de-Ville at Bourges, Noyon (1485-1523), St. Quentin, Compiègne (each 1500), Douai, Arras (demolished).

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CHAPTER XVII

GOTHIC ARCHITECTURE IN GREAT BRITAIN

BOOKS RECOMMENDED: As before, Dehio and Bezold, Jackson, Reber. Also, Bell's Series of *Handbooks of English Cathedrals.* Billings, *The Baronial and Ecclesiastical Antiquities of Scotland.* Bond, *Gothic Architecture in England; Introduction to English Church Architecture.* Brandon, *Analysis of Gothic Architecture.* Britton, *Cathedral Antiquities of Great Britain.* Ditchfield, *The Cathedrals of England.* Moore, *Mediæval Church Architecture of England.* Murray, *Handbooks of the English Cathedrals.* Prior, *A History of Gothic Art in England.* Rickman, *An Attempt to Discriminate the Styles of English Architecture.* Scott, *English Church Architecture.* Sharpe, *Architectural Parallels; The Seven Periods of English Architecture.* Van Rensselaer, *English Cathedrals.* Winkles and Moule, *Cathedral Churches of England and Wales.*

GENERAL CHARACTER. Gothic architecture was developed in England under a strongly established royal power, with an episcopate in no sense hostile to the abbots or in arms against the barons. Many of the cathedrals had monastic chapters, and not infrequently abbots were invested with the episcopal rank. Under Henry VIII the monasteries were suppressed, and the monastic cathedrals reconstituted under "secular" clergy, though the ex-abbot was sometimes retained as bishop. The other cathedrals, governed originally by "secular" or non-monastic clergy, were left undisturbed, and are known as of the "old foundation."*

English Gothic architecture was thus by no means pre-

* The monastic cathedrals "secularized" by Henry VIII are often called the "new foundation." Some writers, however, prefer to call them monastic and to use the term "new foundation" only for cathedrals established since Henry's VIII's time.

dominantly an architecture of cathedrals. If architectural activity in England was on this account less intense and widespread in the twelfth and thirteenth centuries than in France, it was not, on the other hand, so soon exhausted. Fewer new cathedrals were built, but the progressive rebuilding of those already existing seems not to have ceased until the middle or end of the fifteenth century. Architecture in England developed more slowly, but more uniformly, than in France. It contented itself with simpler problems; and if it failed to rival Amiens in boldness of construction and in lofty majesty, it at least never perpetrated a folly like Beauvais. In richness of internal decoration, especially in the mouldings and ribbed vaulting, and in the picturesque grouping of simple masses externally, the British builders went far toward atoning for their structural timidity.

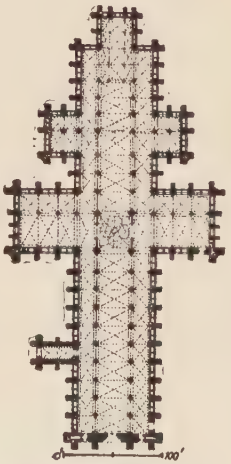

FIG. 133.—PLAN OF SALISBURY CATHEDRAL.

EARLY GOTHIC BUILDINGS. The pointed arch and ribbed vault were importations from France. Early examples appear in the Cistercian abbeys of Furness and Kirkstall, and in the Temple Church at London (1185). But it was in the **Choir of Canterbury,** as rebuilt by William of Sens, after the destruction by fire in 1170 of Ernulph's and Conrad's Norman choir, that these French Gothic features were first applied in a thoroughgoing manner. In plan this choir resembled that of the cathedral of Sens; and its coupled round piers, foliated capitals, pointed arches, six-part vaulting, and *chevet*, were distinctly French. The Gothic details thus introduced slowly supplanted the round arch and other Norman features. For

fifty years the styles were more or less mingled in many buildings, though **Lincoln Cathedral,** as rebuilt in 1192–1200, retained nothing of the earlier round-arched style. But the first church to be designed and built from the foundations in the new style was the cathedral of **Salisbury** (1220–1258; Fig. 133). Contemporary with Amiens, it is a homogeneous and typical example of the Early English style. The predilection for great length observable in the Anglo-Norman churches (as at Norwich and Durham) still prevailed, as it continued to do throughout the Gothic period; Salisbury is 480 feet long. The double transepts, the long choir, the square east end, the relatively low vault (84 feet to the ridge), the narrow grouped windows, all are thoroughly English. Only the simple four-part vaulting recalls French models. **Westminster Abbey** (1245–1269),* on the other hand, betrays in a marked manner the French influence in its internal loftiness (100 feet), its polygonal *chevet* and chapels, and its strongly accented exterior flying-buttresses (Fig. 134).

MIXTURE OF STYLES. Very few English cathedrals are as homogeneous as the two just mentioned, nearly all having undergone repeated remodelings in successive periods. Durham, Norwich, and Oxford are wholly Norman but for their Gothic vaults. Ely, Rochester, Gloucester, and Hereford have Norman naves and Gothic choirs.† Peterborough has an early Gothic façade and late Gothic retro-choir added to an otherwise completely Norman structure. Winchester's Norman nave was remodelled with early Perpendicular details; its choir is early Gothic. The purely Gothic churches and cathedrals—except parish churches, in which England is very rich—are not nearly as numerous in England as in France.

* The western part of the nave and the west front were not completed until 1500.

† But that of Gloucester is merely a reclothing of the Norman choir with late Gothic details and vaulting.

PERIODS. The development of English Gothic architecture followed the same general sequence as the French, and like it the successive stages are commonly characterized by the forms of the tracery.

The EARLY ENGLISH or LANCET period extended roundly from 1175 to 1260, and was marked by simplicity, dignity, and purity of design.

The DECORATED or GEOMETRIC period covered another century, 1260 to 1360, and was characterized by its decorative richness and greater lightness of construction.

The PERPENDICULAR period extended from 1360, or thereabout, well into the sixteenth century. Its salient features were the use of fan-vaulting, four-centred arches, and tracery of predominantly vertical and horizontal lines. The tardy introduction of Renaissance forms finally put an end to the Gothic style in England, after a long period of mixed and transitional architecture.

PLANS. English church plans underwent, during the Gothic Period, but little change from the general types established previous to the thirteenth century. The Gothic cathedrals and abbeys, like the Norman, were very long and narrow, with choirs often nearly as long as the nave, and almost invariably with square eastward terminations. Manchester alone has double side aisles and side chapels, and apsidal chapels are very rare. Canterbury and Westminster (Fig. 134) are the chief exceptions to this, and both show clearly the French influence. Another striking peculiarity of the English plans is the frequent occurrence of secondary transepts, adding greatly to the external picturesqueness. These occur in rudimentary form in Canterbury, and at Durham the Chapel of the Nine Altars, added 1242–1290 to the eastern end, forms in reality a secondary transept. This feature is most perfectly developed in the cathedral of Salisbury (Fig. 133), and appears also at Lincoln, Worcester, Wells, and Hereford. The English cathe-

dral plans are also distinguished by the retention or incorporation of many conventual features, such as cloisters, libraries, and halls, and by the grouping of chapter-houses and Lady-chapels with the main edifice. Thus the English cathedral plans and those of the great abbey churches present a marked contrast with those of France and the Continent generally. While Amiens, the greatest of French cathedrals, is 478 feet long, and internally 140 feet high, Ely measures 565 feet in length, and less than 75 feet in height. Notre Dame is 148 feet wide; the English naves are usually under 80 feet in total width of the three aisles. No cathedrals were originally built with five aisles. There are, however, a number of parish churches with five aisles, and one of these, at Manchester, has in modern times been converted into a cathedral of a newly-partitioned diocese. The present exterior side aisles of Chichester were formed from the original side-chapels of the nave.

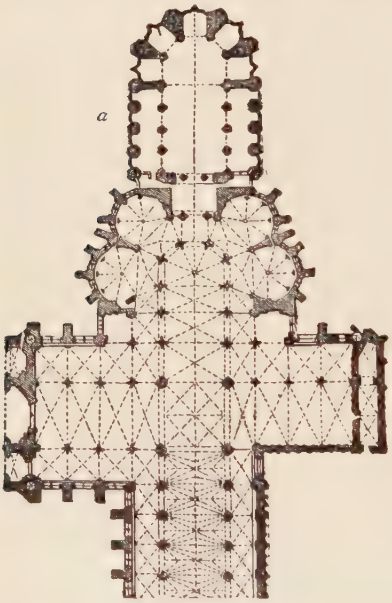

FIG. 134.—EASTERN HALF OF WESTMINSTER ABBEY. PLAN.
a, Henry VII's chapel.

STRUCTURAL DESIGN. The most striking peculiarity of English Gothic design was its studious avoidance of temerity or venturesomeness in construction. Both the height and width

of the nave were kept within very moderate bounds, and the supports were never reduced to extreme slenderness. While much impressiveness of effect was undoubtedly lost thereby, there was some gain in freedom of design, and there was less obtrusion of structural elements in the exterior composition. The flying-buttress became a feature of minor importance where the clearstory was kept low, as in most English churches. In many cases the flying arches were hidden under the aisle roofs. The English cathedrals and larger churches are long and low, depending for effect mainly upon the projecting masses of their transepts, the imposing square central towers which commonly crown the crossing, and the grouping of the main structure with chapter-houses, cloisters, and Lady-chapels.

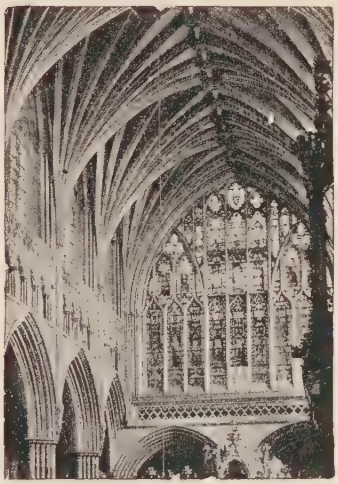

FIG. 135.—RIBBED VAULTING, CHOIR OF EXETER CATHEDRAL.

VAULTING. The richness and variety of English vaulting contrast strikingly with the persistent uniformity of the French. A few of the early Gothic vaults, as in the naves of Chichester, Salisbury, Wells, and Gloucester, were simple four-part, ribbed vaults substantially like the French. But the English disliked and avoided the twisted and dome-like surfaces of the French vaults, preferring horizontal ridges, and, in the filling-masonry straight courses meeting at the ridge in zig-zag lines, as in southwest France (see Figs. 111, 124). This may be seen in Westminster Abbey. The idea of ribbed construction was then seized upon and given a new application.

By springing a large number of ribs from each point of support, the vaulting-surfaces were divided into long, narrow triangles, the filling of which was comparatively easy (Fig. 135). The ridge was itself furnished with a straight rib, decorated with carved rosettes or *bosses* at each intersection with a vaulting-rib. The naves and choirs of Lincoln, Lichfield, Exeter, and the nave of Westminster illustrate this method. The logical corollary of this practice was the introduction of minor ribs

FIG. 136.—NET OR LIERNE VAULTING, TEWKESBURY ABBEY.

called *liernes*, connecting the main ribs and forming complex reticulated and star-shaped patterns. Vaults of this description are among the most beautiful in England. One of the richest is in the choir of Gloucester (1337–1377). Less correct constructively is that over the choir of Wells, while the choir of Ely, the naves of Tewkesbury Abbey (Fig. 136), and of Canterbury and Winchester cathedrals, all built between 1360 and 1400, illustrate the same system. Such vaults are called *lierne* or *star* vaults. The further possible development of this type is seen in the vaults of Norwich Cathedral (1463), of the

nave of the fine church at Sherborne, and of St. George's Chapel, Windsor.

FAN-VAULTING. The later steps in the process may be observed in the vaults of the choir of Oxford Cathedral, the Divinity School at Oxford, the retro-choir of Peterborough, the cloisters of Gloucester, and many other examples. The diverging ribs being made of uniform curvature, the inverted pyramidal vaulting-masses springing from each support became a species of concave conoids, meeting at the ridge in such a way as to leave a series of flat-lozenge-shaped spaces at the summit of the vault (Fig. 142). The ribs were multiplied indefinitely, and losing thus in individual and structural importance became a mere decorative pattern of tracery on the severeys. To fill the awkward flat lozenges at the ridge, elaborate paneling was resorted to; or, in some cases, long stone pendants were inserted at those points—a device highly decorative but wholly unstructural. At Cambridge, in the choir of **King's College Chapel,** and in the **Chapel of Henry VII** (Fig. 142), at Westminster, this sort of vaulting received its most elaborate development. The *fan-vault,* as it is called, illustrates the logical evolution of a decorative element from a structural starting-point, leading to results far removed from the original conception. Rich and sumptuous as are these ceilings, they are with all their orna-

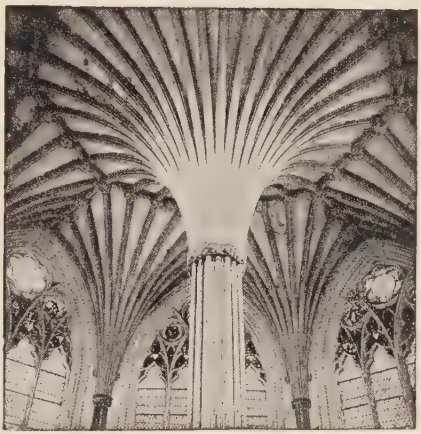

FIG. 137.—VAULT OF CHAPTER-HOUSE, WELLS.

ment less satisfactory than the ribbed vaults of the preceding period.

CHAPTER-HOUSES. One of the most beautiful forms of ribbed vaulting was developed in the polygonal halls erected for the deliberations of the cathedral chapters of Lincoln (1225), Westminster (1250), Salisbury (1250), and Wells (1292), in which the vault-ribs radiated from a central column to the sides and angles of the polygon (Fig. 137). If these vaults were less majestic than domes of the same diameter, they were far more decorative and picturesque, while the chapter-houses themselves were the most original and striking products of English Gothic art. Every feature was designed with strict regard for the structural system determined by the admirable vaulting, and the Sainte Chapelle was not more logical in its exemplification of Gothic principles. To the four above mentioned examples should be added that of York (1280–1330), which differs from them in having no central column; by some critics it is esteemed the finest of them all. Its ceiling is a Gothic dome, 57 feet in diameter, but unfortunately executed in wood. Its geometrical window-tracery and richly canopied stalls are admirable. The vault or dome of the smaller but beautiful chapter-house of Southwell should also be mentioned.

OCTAGON AT ELY. The magnificent **Octagon** of Ely Cathedral, at the intersection of the nave and transepts, belongs in the same category with these polygonal chapter-house vaults. It was built by Alan of Walsingham in 1337, after the fall of the central tower and the destruction of the adjacent bays of the choir. It occupies the full width of the three aisles, and covers the ample space thus enclosed with a simple but beautiful groined and ribbed vault of wood reaching to a central octagonal lantern, which rises much higher and shows externally as well as internally. Unfortunately, this vault is of wood, and would require important modifications of detail

if carried out in stone. But it is so noble in general design and total effect, that one wonders the type was not universally adopted for the crossing in all cathedrals, until one observes that no cathedral of importance was built after Walsingham's time, nor did any other central towers opportunely fall to the ground.

WINDOWS AND TRACERY. In the Early English Period (1200–1260 or 1275) the windows were at first tall and narrow (*lancet* windows), and generally grouped by twos and threes, though sometimes four and even five are seen together (as the "Five Sisters" in the N. transept of York). In the nave of Salisbury and the retro-choir of Ely the side aisles are lighted by coupled windows and the clearstory by triple windows, the central one higher than the others—a surviving Norman practice. Plate-tracery was, as in France, an intermediate step leading to the development of bar-tracery (see Fig. 113). The English followed here the same reasoning as the French. At first the openings constituted the design, the intervening stonework being of secondary importance. Later the forms of the openings were subordinated to the pattern of the stone framework of bars, arches, circles, and cusps. Bar-tracery of this description prevailed in England through the greater part of the Decorated Period (1260–1360), and somewhat resembled the contemporary French geometric tracery, though more varied and less rigidly constructive in design. An early example of this tracery occurs in the cloisters of Salisbury (1280; Fig. 138); others in the clearstories of the choirs of Lichfield, Lincoln, and Ely, the nave of York, and the chapter-houses

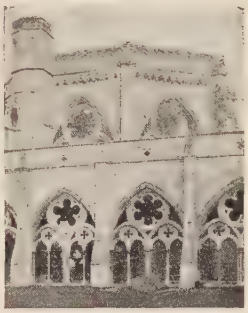

FIG. 138.—CLOISTERS, SALISBURY CATHEDRAL (SHOWING UPPER PART OF CHAPTER-HOUSE).

mentioned above, where, indeed, it seems to have received its earliest development. After the middle of the fourteenth century lines of double curvature were introduced, producing what is called *flowing* tracery, somewhat resembling the French Flamboyant, though simpler (Fig. 114). Examples of this style are found in Wells, in the side aisles and triforium of the choir of Ely, and in the S. transept rose-window of Lincoln.

THE PERPENDICULAR STYLE. Flowing tracery was, however, a transitional phase of design, and was soon superseded by *Perpendicular* tracery, in which the mullions were carried through to the top of the arch and intersected by horizontal transoms. This formed a very rigid and mechanically correct system of stone framing, but lacked the grace and charm of the two preceding periods. The earliest examples are seen in the work of Edington and of Wykeham in the reconstructed cathedral of Winchester (1360–1394), where the tracery was thus made to harmonize with the accentuated and multiplied vertical lines of the interior design. It was at this late date that the English seem first to have fully appropriated the Gothic ideas of emphasized vertical elements and wall surfaces reduced to a minimum. The development of fan-vaulting had led to the

FIG. 139.—PERPENDICULAR TRACERY, WEST WINDOW OF ST. GEORGE'S, WINDSOR.

adoption of a new form of arch, the four-centred or *Tudor arch* (Fig. 139), to fit under the depressed apex of the vault. The whole design internally and externally was thenceforward controlled by the form of the vaulting and of the openings. The windows were made of enormous size, especially at the east end of the choir, which was square in nearly all English churches, and in the west windows over the entrance. These windows had already reached, in the Decorated Period, an enormous size, as at York; in the Perpendicular Period the two ends of the church were as nearly as possible converted into walls of glass. The East Window of Gloucester reaches the prodigious dimensions of 38 by 72 feet. The most complete examples of the Perpendicular tracery and of the style in general are the three chapels already mentioned (p. 235); those, namely, of **King's College** at Cambridge, of **St. George** at Windsor, and of **Henry VII** in Westminster Abbey.

FIG. 140.—WEST FRONT, LICHFIELD CATHEDRAL.

FRONTS. The sides and east ends were, in most cases, more successful than the west fronts. In these the English displayed a singular indifference or lack of creative power. They produced nothing to rival the majestic façades of Notre Dame, Amiens, or Reims, and their portals are almost ridiculously small. The front of **York** Cathedral is the most notable in

the list for its size and elaborate decoration. Those of **Lincoln** and **Peterborough** are, however, more interesting in the picturesqueness and singularity of their composition. The first-named forms a vast arcaded screen, masking the bases of the two western towers, and pierced by three huge Norman arches, retained from the original façade. The west front of Peterborough is likewise a mask or screen, mainly composed of three colossal recessed arches, whose vast scale completely dwarfs the little porches which give admittance to the church. Salisbury has a curiously illogical and ineffective façade. Those of **Lichfield** and **Wells** are, on the other hand, beautiful designs, the first with its twin spires and rich arcading (Fig. 140), the second with its unusual wealth of figure-sculpture, and massive square towers.

CENTRAL TOWERS. These are the most successful features of English exterior design. Most of them form lanterns internally over the crossing, giving to that point a considerable increase of dignity. Externally they are usually massive and lofty square towers, and having been for the most part completed during the fourteenth and fifteenth centuries they are marked by great richness and elegance of detail. Durham, York, Canterbury, Lincoln, and Gloucester may be mentioned as notable examples of such square towers; that of Canterbury is the finest. Two or three have lofty spires over the lantern. Among these, that of Salisbury is chief, rising 414 feet from the ground, admirably designed in every detail. It was not completed till the middle of the fourteenth century, but carries out with great felicity the spirit of the earlier style in which it was begun. Lichfield and Chichester have somewhat similar central spires, but less happy in proportion and detail than the Salisbury example; Norwich, a spire on the Norman tower.

INTERIOR DESIGN. In the Norman churches the pier-arches, triforium, and clearstory were practically equal. In the Gothic churches the pier-arches generally occupy the lower

half the height, the upper half being divided nearly equally between the triforium and clearstory, as in Lincoln, Lichfield (nave), Ely (choir). In some cases, however (as at Salisbury, Westminster, Winchester, choir of Lichfield), the clearstory is magnified at the expense of the triforium (Fig. 141). Three peculiarities of design sharply distinguish the English treatment of these features from the French. The first is the multiplicity of fine mouldings in the pier-arches; the second is the decorative elaboration of design in the triforium; the third, the variety in the treatment of the clearstory. In general the English interiors are much more ornate than the French. Black Purbeck marble is frequently used for the shafts clustered around the central core of the pier, giving a striking and somewhat singular effect of contrasted color. The rich vaulting, the highly decorated triforium, the moulded pier-arches, and at the end of the vista the great east window, produce an impression very different from the more simple and lofty stateliness of the French cathedrals. The great length and lowness of the English interiors combine with this decorative richness to give the impression of repose and grace, rather than of majesty and power. This tendency reached its highest expression in the Perpendicular churches and chapels, in which every surface was covered with minute paneling.

FIG. 141.—ONE BAY OF CHOIR, LICHFIELD CATHEDRAL.

CARVING. In the Early English Period the details were

carved with remarkable vigor. In the capitals and corbels, crockets and finials, the foliage was crisp and fine, curling into convex masses and seeming to spring from the surface which it decorated. Mouldings were frequently ornamented in the hollows with foliage of this character, or with the *dog-tooth* ornament or the *ball-flower*, introducing repeated points of light into the shadows of the mouldings. These were fine and complex, deep hollows alternating with round mouldings (*bowtels*) sometimes made pear-shaped in section by a fillet on one side.

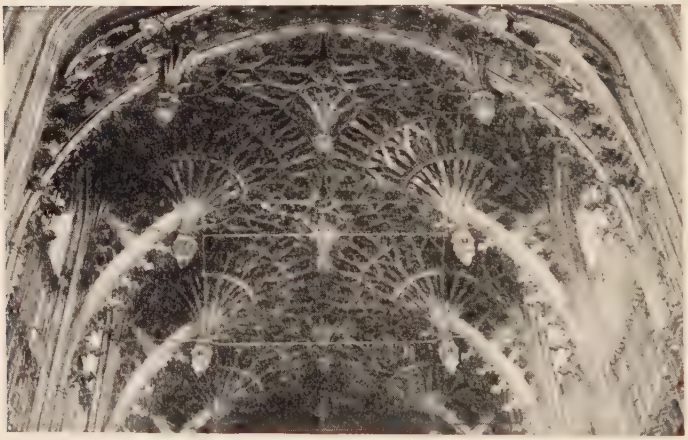

FIG. 142.—FAN VAULTING, HENRY VII'S CHAPEL, WESTMINSTER ABBEY.

Cusping—the decoration of an arch or circle by triangular projections on its inner edge—was introduced during this period, and became an important decorative resource, especially in tracery design. In the Decorated Period the foliage was less crisp though sometimes treated with extraordinary realism; sea-weed and oak-leaves, closely and confusedly bunched, were often used in the capitals, while crockets were larger, double-curved, with leaves swelling into convexities like oak-galls.

Geometrical and flowing tracery were developed, double curves began to be used in the profiles of mouldings, and the hollows were less frequently adorned with foliage.

In the Perpendicular Period nearly all flat surfaces were paneled in designs resembling the tracery of the windows. The capitals were less important than those of the preceeding periods, and the mouldings weaker and less effective. The Tudor rose appears as an ornament in square panels and on flat surfaces; and moulded battlements, which first appeared in Decorated work, now become a frequent crowning motive in place of a cornice. There is less originality and variety in the ornament, but a great increase in its amount (Fig. 142).

PARISH CHURCHES. Many of these were of exceptional beauty of composition and detail. They display the greatest variety of plan, churches with two equal-gabled naves side by side being not uncommon. A considerable proportion of them date from the fourteenth and fifteenth centuries, and are chiefly interesting for their square, single, west towers and their carved wooden ceilings (see below). The tower was usually built over the central western porch; broad and square, with corner buttresses terminating in pinnacles, it was usually finished without a spire. Crenelated battlements crowned the upper story. Among notable square towers are those of **Boston** and St. Nicholas, Newcastle. Important parish churches are St. Michael's, Coventry; St. Mary's Redcliffe, at Bristol; St. Stephen's, Norwich; Sherborne, Patrington, and many others.

SPIRES. When spires were added to the west towers, the transition from the square tower to the octagonal spire was effected by *broaches* or portions of a square pyramid intersecting the base of the spire, or by corner pinnacles and flying-buttresses. The spires of the more important parish churches are often of exceptional beauty, and constitute a notably successful element in English mediæval architecture. Even the simpler broach-spires like Frampton or Ewerby are strikingly

effective, while the more elaborate spires of later date, such as Louth, Patrington or **St. Michael's,** Coventry, are architectural works of the first order. The most perfect of all English spires is, however, that of Salisbury Cathedral.

WOODEN CEILINGS. The English treated woodwork with consummate skill. They invented and developed a variety of forms of roof-truss in which the proper distribution of the strains was combined with a highly decorative treatment of the several parts by carving, moulding, and arcading. The ceiling surfaces between the trusses were handled decoratively, and the oaken open-timber ceilings of many of the English churches and civic or academic halls (Christ Church Hall, Oxford; Westminster Hall, London) are such noble and beautiful works as quite to justify the substitution of wooden for vaulted ceilings (Fig. 143). The *hammer-beam* truss was as logical structurally, and æsthetically as satisfactory, as any feature of French Gothic stone construction. Without the use of tie-rods to keep the rafters from spreading, it brought the strain of the roof upon internal brackets low down on the wall, and produced a beautiful effect by the repetition of its graceful curves in each truss. The ceilings of the parish churches of Wymondham, Trunch, March, St. Stephen's, Norwich, and the Middle

FIG. 143.—HAMMER-BEAM TRUSS, WESTMINSTER HALL.

Temple Hall, London, are fine examples of this branch of English design.

CHAPELS AND HALLS. Many of these rival the cathedrals in beauty and dignity of design. The royal chapels at Windsor and Westminster have already been mentioned, as well as King's College Chapel at Cambridge, and Christ Church Hall at Oxford. To these college halls should be added the chapel of Merton College at Oxford, and the beautiful chapel of St. Stephen at Westminster, most unfortunately demolished when the present Parliament House was erected. The Lady-chapels of Gloucester and Ely, though connected with the cathedrals, are really independent designs of late date, and remarkable for the richness of their decoration, their great windows, and elaborate ribbed vaulting. Some of the halls in mediæval castles and manor-houses are also worthy of note, especially for their timber ceilings.

MINOR MONUMENTS. The student of Gothic architecture should also give attention to the choir-screens, tombs, and chantries which embellish many of the abbeys and cathedrals. The rood-screen at York is a notable example of the first; the tomb of De Gray in the same cathedral, and tombs and chantries in Canterbury, Winchester, Westminster Abbey, Ely, St. Alban's Abbey, and other churches are deservedly admired. In these the English love for ornament, for minute carving, and for the contrast of white and colored marble, found unrestrained expression. To these should be added the market-crosses of Salisbury and Winchester, and Queen Eleanor's Cross at Waltham.

DOMESTIC ARCHITECTURE. The mediæval castles of Great Britain belong to the domain of military engineering rather than of the history of art, though occasionally presenting to view details of considerable architectural beauty. The growth of peace and civic order is marked by the erection of manor-houses, the residences of wealthy landowners. Some

of these houses are of imposing size, and show the application to domestic requirements, of the late Gothic style which prevailed in the period to which most of them belong. The windows are square or Tudor-arched, with stone mullions and transoms of the Perpendicular style, and the walls terminate in merlons or crenelated parapets, recalling the earlier military structures. The palace of the bishop or archbishop, adjoining the cathedral, and the residences of the dean, canons, and clergy, together with the libraries, schools, and gates of the cathedral enclosure, illustrate other phases of secular Gothic work. Some of these structures are of striking architectural merit, and nearly all possess a picturesque charm which is very attractive.

Not many stone houses of the smaller class remain from the Gothic period in England. But there is hardly an old town that does not retain many of the half-timbered dwellings of the fifteenth or even fourteenth century, some of them in excellent preservation. They are for the most part wider and lower than the French houses of the same class, but are built on the same principle, and, like them, the woodwork is more or less richly carved.

MONUMENTS. (A. = abbey church; C. = cathedral; r. = ruined; trans. = transept; each monument is given under the date of the earliest extant Gothic work upon it, with additions of later periods in parentheses.)

EARLY ENGLISH: Kirkstall A., 1152-82, first pointed arches; Canterbury C., choir, 1175-84 (nave, 1378-1411; central tower, 1500); Wells C., 1190-1206 (W. front 1225, choir later, chapter-h. 1292-1319); Lincoln C., choir, trans., 1192-1200 (vault 1250; nave and E. end 1260-80; Lichfield C., 1200-50 (W. front 1275; presbytery 1325); Rochester C., choir and trans., 1200-39 (nave Norman); Worcester C., choir 1203-18, nave partly Norman (W. end 1375-95); Chichester C., 1204-44 (spire rebuilt 17th century); Fountains A., 1205-46; Salisbury C., 1220-58 (cloister, chapter-h. 1263-84; spire 1331); Elgin C., 1224-44; Beverley A., choir, trans. 1225-1245 (nave 1320-50; W. front 1380-1430); York C., S. trans. 1225; N. trans. 1260

(nave, chapter-h. 1291-1345; W. window 1338; central tower 1389-1407; E. window 1407); Southwell C., 1233-94 (nave Norman); Ripon C., 1233-94 (central tower 1459); Ely C., choir 1229-54 (nave Norman; octagon and presbytery 1323-62); Peterborough C., W. front 1237 (nave Norman; retro-choir, late 14th century); Netley A., 1239 (r.); Durham C., "Nine Altars" and E. end choir, 1235-90 (nave, choir, Norman; W. window 1341; central tower finished 1480); Glasgow C. (with remarkable Early English crypt), 1242-77; Gloucester C., nave vaulted 1239-42 (nave mainly Norman; choir 1337-51; cloisters 1375-1412; W. end 1420-37; St. Mary's A., York, 1272-92 (r.).

DECORATED: Merton College Chapel, Oxford, 1274-1300; Hereford C., N. trans., chapter-h., cloisters, vaulting, 1275-92 (nave, choir, Norman); Exeter C., choir, trans., 1279-91; nave 1331-50 (E. end remodelled 1390); Lichfield C., Lady-chapel 1310; Ely C., Lady-chapel, 1321-49; Melrose A., 1327-99 (nave 1500; r.); St. Stephen's chapel, Westminster 1349-64 (demolished); Edington church, 1352-61; Carlisle C., E. end and upper parts 1352-95 (nave in part and S. trans. Norman; tower finished 1419); Winchester C., W. end remodelled 1360-66 (nave and aisles 1394-1410; trans. partly Norman); York C., Lady-chapel 1362-72; churches of Patrington and Hull, late 14th century; St. Mary's Redcliffe at Bristol, 1292-1460.

PERPENDICULAR: Winchester C., nave (1371-1460; Canterbury C., nave 1379-1400; cloister 1397-1412; Holy Cross Church, Canterbury, 1380; St. Mary's Warwick, 1381-91; Manchester C., 1422; St. Mary's, Bury St. Edmunds, 1424-33; Sherborne, choir 1436 (nave 1475-1504); Beauchamp Chapel, Warwick, 1439; King's College Chapel, Cambridge, 1446; vaults 1508-15; Roslyn Chapel, Edinburgh, 1446-90; Gloucester C., Lady-chapel, 1457-98; Holy Trinity, Stratford-on-Avon, 1465-91; Norwich C., upper part and E. end of choir, 1472-99 (the rest mainly Norman); St. George's Chapel, Windsor, 1481-1508; choir vaulted, 1507-20; Bath A., 1500-39; Chapel of Henry VII, Westminster, 1503-20; Central towers of York, Lincoln, Gloucester, Durham, Canterbury and Bristol C.; Churches of S. Nicholas, Lynn, St. Michael's, Coventry, Boston, Louth, Malvern Priory and many others.

ACADEMIC AND SECULAR BUILDINGS: Winchester Castle Hall, 1222-35; Merton College Chapel, Oxford, 1274-1300; Library Merton College, 1354-78; Norborough Hall, 1356; Windsor Castle, upper ward, 1359-73; Winchester College, 1387-93; Wardour Castle, 1392; Westminster Hall, rebuilt, 1397-99; St. Mary's Hall, Coventry,

1401-14; Warkworth Castle, 1440; St. John's College, All Souls' College, Oxford, 1437; Eton College, 1441-1522; Divinity Schools, Oxford, 1445-54; Magdalen College, Oxford, 1475-80, tower, 1500; Christ Church Hall, Oxford, 1529.

CHAPTER XVIII

GOTHIC ARCHITECTURE IN GERMANY, THE NETHERLANDS, AND SPAIN

BOOKS RECOMMENDED: As for Chapter XVI, Adamy, Dehio and Bezold, Hasak, Reber. Also, Adler, *Mittelalterliche Backstein-Bauwerke des preussischen Staates.* Essenwein (*Hdbuch. d. Arch.*), *Die romanische und die gotische Baukunst; der Wohnbau.* Foerster, *Denkmäler deutscher Baukunst.* Gade, *Cathedrals of Spain.* Hase and others, *Die mittelalterlichen Baudenkmäler Niedersachsens.* Kallenbach, *Chronologie der deutschen mittelalterlichen Baukunst.* Lampérez y Romea, *Historia de la Arquitectura Cristiana Española en la Edad Media.* Lübke, *Ecclesiastical Art in Germany during the Middle Ages.* Schayes, *Histoire de l'architecture en Belgique.* Street, *Gothic Architecture in Spain* (new ed. by G. G. King). Uhde, *Baudenkmäler in Spanien.* Ungewitter, *Lehrbuch der gothischen Constructionen.* Villa Amil, *Hispania Artistica Monumental.* Watson, *Portuguese Architecture.*

EARLY GOTHIC WORKS. The Gothic architecture of Germany is less interesting to the general student than that of France and England not only because its development was less systematic and more provincial, but also because it produced fewer works of high intrinsic merit. The introduction into Germany of the pointed style was tardy, and its progress slow. Romanesque architecture had created imposing types of ecclesiastical architecture, which the conservative Teutons were slow to abandon. The result was a half-century of transition and a mingling of Romanesque and Gothic forms. St. Castor, at Coblentz, built as late as 1208, is wholly Roman-

esque. Even when the pointed arch and vault had finally come into general use, the plan and the constructive system still remained predominantly Romanesque. The western apse and short sanctuary of the earlier plans were retained. There was no triforium, the clearstory was insignificant, and the whole aspect low and massive. The Germans avoided, at first, as did the English, the constructive audacities and difficulties of the French Gothic, but showed less of invention and grace than their English neighbors. When, however, through the influence of foreign models, especially of the great French cathedrals, and through the employment of foreign architects, the Gothic styles were at last thoroughly domesticated, a spirit of ostentation took the place of the earlier conservatism. Technical cleverness, exaggerated ingenuity of detail, and constructive *tours de force* characterize most of the German Gothic work of the late fourteenth and of the fifteenth century. This is exemplified in the slender mullions of Ulm, the lofty and complicated spire of Strasburg, and the curious traceries of churches and houses in Nuremberg.

PERIODS. The stages of German mediæval architectural development corresponded in sequence, though not in date, with the movement elsewhere. The maturing of the true Gothic styles was preceded by more than a half-century of transition. Chronologically the periods* may be broadly stated as follows:

The TRANSITIONAL, 1170–1225.

The EARLY POINTED, 1225–1275.

The MIDDLE or DECORATED, 1275–1350.

The FLORID, 1350–1530.

These divisions are, however, far less clearly defined than in France and England. The development of forms was less logical and consequential, and less uniform in the different provinces, than in those western lands.

* See *ante*, p. 204.

PLANS. In these there was more variety than in any other part of Europe except Italy. Some churches, like Naumburg, retained the Romanesque system of a second western apse and short choir. The Cistercian churches generally had square east ends, while the polygonal eastern apse without ambulatory is seen in St. Elizabeth at Marburg, the Minster at Ulm, the cathedrals of Ratisbon and Vienna, and many other churches. The earliest example of the chevet with a single ambulatory and a series of radiating apsidal chapels was **Magdeburg** Cathedral (1208–11), later followed by Altenburg, Cologne, Freiburg, Lübeck, Prague and Zwettl, St. Francis at Salzburg and some other churches. Side chapels to nave or choir appear in the cathedrals of Lübeck, Munich, Oppenheim, Prague and Zwettl. **Cologne Cathedral,** by far the largest and most magnificent of all, is completely French in plan, uniting in one design the leading characteristics of the most notable French churches (Fig. 144). It has complete double aisles in both nave and choir, three-aisled transepts, radial chevet-chapels and twin western towers. The ambulatory is, however, single, and there are no lateral chapels. A typical German treatment was the eastward termination of the church by polygonal chapels, one in the axis of each aisle, the central one projecting beyond its neighbors. Where there were five aisles, as at Xanten, the effect was particularly fine. The plan of the curious polygonal church of **Our Lady** (Lieb-

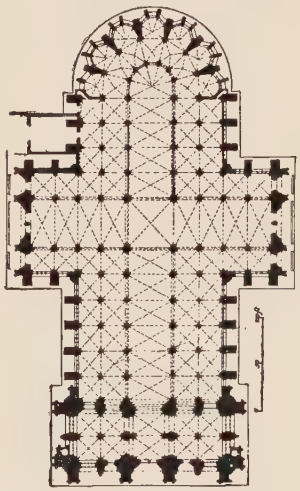

FIG. 144.—COLOGNE CATHEDRAL. PLAN.

frauenkirche; 1227–43) built on the site of the ancient circular baptistery at Treves, would seem to have been produced by doubling such an arrangement on either side of the transverse axis (Fig. 145).

CONSTRUCTION. As already remarked, a tenacious hold of Romanesque methods is observable in many German Gothic monuments. Broad wall-surfaces with small windows and a general massiveness and lowness of proportions were long preferred to the more slender and lofty forms of true Gothic design. Square vaulting-bays were persistently adhered to, covering two aisle-bays. The six-part system was only rarely resorted to, as at Schlettstadt, and in St. George at Limburg-on-the-Lahn (Fig. 146). The ribbed vault was an imported idea, and was never systematically developed. Under the final dominance of French models in the second half of the thirteenth century, vaulting in oblong bays became more general, powerfully influenced by buildings like Freiburg, Cologne, and Ratisbon Cathedrals, and St. Catherine at Oppenheim. In the fourteenth century the growing taste for elaboration and rich detail led to the introduction of multiplied decorative ribs, not, as in England, through a logical development of constructive methods, but purely as decorative features. Conspicuous examples of its application are found in the cathedrals of Freiburg, Ulm, Prague, and Vienna; in St. Barbara at Kuttenberg, and many other important churches. But with all the richness and complexity of these net-like vaults the Germans developed

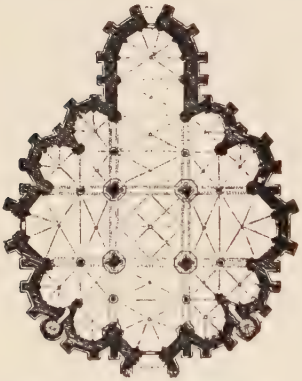

FIG. 145.—CHURCH OF OUR LADY, TREVES.

nothing like the fan-vaulting or chapter-house ceilings of England.

SIDE AISLES. A notable feature of many German churches is the raising of the side-aisle vaults to the same height as that of the central aisle. Thus was developed a distinctly new type, to which German writers have given the name of *hall-church*. The result was to transform completely the internal perspective of the church as well as its structural membering. The clearstory disappeared; the central aisle no longer dominated the interior; the pier-arches and side-walls were greatly increased in height, and flying-buttresses were no longer required. The whole design appeared internally more spacious, but lost greatly in variety and in interest. The cathedral of **St. Stephen** at Vienna is the most imposing instance of this treatment, which first appeared in the church of St. Elizabeth at Marburg (1235–83; Fig. 145). St. Barbara at Kuttenberg, St. Martin's at Landshut (1404), the Frauenkirche of Munich, St. Catherine at Brandenburg, the Abbey at Zwettl and the Cathedral of Stendal, are others among many examples of this type.

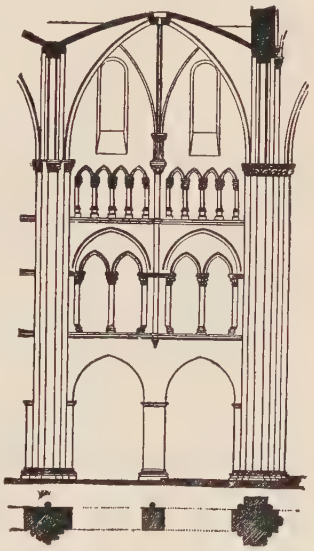

FIG. 146.—ONE BAY OF CATHEDRAL OF ST. GEORGE, LIMBURG.

TOWERS AND SPIRES. The same fondness for spires which had been displayed in the Rhenish Romanesque churches produced in the Gothic period a number of strikingly beautiful church steeples, in which openwork tracery was substituted for

the solid stone pyramids of earlier examples. The most remarkable of these spires are those of Freiburg (1300), Strasburg, and Cologne Cathedrals, of the church at Esslingen, St. Martin's at Landshut, and the Cathedral of Vienna. In these the transition from the simple square tower below to the octagonal belfry and spire is generally managed with skill. In the remarkable tower of the cathedral at Vienna (1433) the transition is too gradual, so that the spire seems to start from the ground and lacks the vigor and accent of a simpler square lower portion. The over-elaborate spire of **Strasburg** (1429, by Junckher of Cologne; lower parts and façade, 1277–1365, by *Erwin von Steinbach* and his sons) reaches a height of 468 feet; the spires of Cologne, completed in 1883 from the original fourteenth-century drawings, long lost but recovered by a happy accident, are 500 feet high. The spires of **Ratisbon** and **Ulm** were also in the last century completed in the original style.

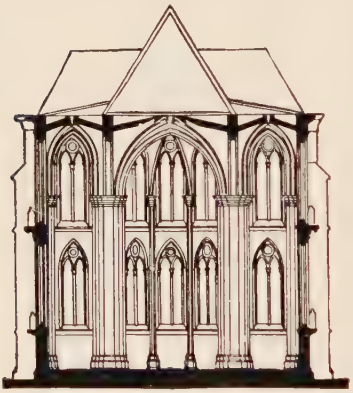

FIG. 147.—SECTION OF ST. ELIZABETH, MARBURG.

DETAILS. German window tracery was best where it most closely followed French patterns, but it tended always towards the faults of mechanical stiffness and of technical display in over-slenderness of shafts and mullions. The windows, especially in the "hall-churches," were apt to be too narrow for their height. In the fifteenth century ingenuity of geometrical combinations took the place of grace of line, and later the tracery was often tortured into a stone caricature of rustic-

work of interlaced and twisted boughs and twigs, represented with all their bark and knots (*branch-tracery*). The execution was far superior to the design. A favorite device for the display of technical skill was the carving of intersecting mouldings. The carving of foliage in capitals, finials, etc., calls for no special mention for its originality or its departure from French types.

HISTORICAL DEVELOPMENT. The so-called **Golden Portal** of **Freiburg** in the Erzgebirge is perhaps the first distinctively Gothic work in Germany, dating from 1190. From that time on, Gothic details appeared with increasing frequency, especially in the Rhine provinces, as shown in many transitional structures. **Gelnhausen** and Aschaffenburg are early thirteenth century examples; pointed arches and vaults appear in the Apostles' and St. Martin's churches at Cologne; and the great church of **St. Peter and St. Paul** at Neuweiler in Alsace has an almost purely Gothic nave of the same period. The churches of **Bamberg, Fritzlar,** and **Naumburg,** and in Westphalia those of **Münster** and **Osnabrück,** are important examples of the transition. The French influence, especially the Burgundian, appears as early as 1212 in the cathedral of **Madgeburg,** imitating the choir of Soissons, and in the structural design of the Liebfrauenkirche at Treves, as already mentioned; it reached complete ascendancy in Alsace at **Strasburg** (nave 1240–75), in Baden at **Freiburg** (nave 1270), and in Prussia at **Cologne** (1248–1322). Strasburg Cathedral is especially remarkable for its façade, the work of Erwin von Steinbach and his sons (1277–1346), designed after French models, and its north spire, built in the fifteenth century. Cologne Cathedral was begun in 1248 by Gerhard von Riel and continued by Meister Arnold, in imitation of the contemporary choir of Amiens, and the choir was consecrated in 1322. The nave and W. front were partly built during the first half of the fourteenth century, though the towers were

not completed till 1880. In spite of its vast size and slow construction, it is in style the most uniform of all great Gothic cathedrals, as it is the most lofty (excepting the choir of Beauvais) and the largest excepting Milan and Seville. Unfortunately its details, though pure and correct, are singularly dry and mechanical, while its very uniformity deprives it of the picturesque and varied charm which results from a mixture of styles recording the labors of successive generations. The same criticism may be raised against the late minster of **Ulm** (choir, 1377–1449; nave, 1477; Fig. 148). The Cologne influence is observable in the widely separated cathedrals of Utrecht in the Netherlands, Metz in the W., Minden and **Halberstadt** (begun 1250; mainly built after 1327) in Saxony, and in the S. in the church of **St. Catherine** at Oppenheim. To the E. and S., in the cathedrals of **Prague** (Bohemia) by *Matthew of Arras* (1344–52) and **Ratisbon** (or Regensburg, 1275), the French influence predominates, at least in the details and construction. The last-named is one of the most dignified and beautiful of German Gothic churches—German in plan, French in execution. The French influence also manifests itself in the details of many of the peculiarly German churches with aisles of equal height.

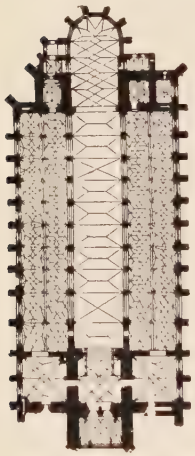

FIG. 148.—PLAN OF MINSTER OF ULM.

More peculiarly German are the brick churches of North Germany, where stone was almost wholly lacking. In these, flat walls, square towers, and decoration by colored tiles and bricks are characteristic, as at Brandenburg (St. Godehard and St. **Catherine,** 1346–1400), at **Prentzlau,** Tängermünde, Königsberg, etc. Lübeck possesses notable monuments of brick architecture in the churches of **St. Mary** and St. Catherine,

both much alike in plan and in the flat and barren simplicity of their exteriors. **St. Martin's** at **Landshut** in the South is also a notable brick church.

LATE GOTHIC. As in France and England, the fourteenth and fifteenth centuries were mainly occupied with the completion of existing churches, many of which, up to that time, were still without naves. The complicated ribbed vaults of this period are among its most striking features (see p. 244). Spire-building was as general as was the erection of central square towers in England, during the same period. To this time also belong the overloaded traceries and minute detail of the **St. Sebald** and St. Lorenz churches and Frauenkirche, and of several secular buildings, all at Nuremberg, the façade of Chemnitz Cathedral, and similar works. The nave and tower of St. Stephen at Vienna (1359–1433), the church of Sta. Maria in Gestade in the same city, and the cathedral of Kaschau in Hungary, are Austrian masterpieces of late Gothic design.

SECULAR BUILDINGS. Germany possesses a number of important examples of secular Gothic work, chiefly municipal buildings (gates and town halls) and castles. The first completely Gothic castle or palace was not built until 1280, at **Marienburg** (Prussia), and was completed a century later. It consists of two courts, the earlier of the two forming a closed square and containing the chapel and chapter-house of the Order of the German Knights. The later and larger court is less regular, its chief feature being the **Great Hall** of the Order, in two aisles. All the vaulting is of the richest multiple-ribbed type. Other castles are at Marienwerder, Heilsberg (1350) in E. Prussia, Karlstein in Bohemia (1347), and the **Albrechtsburg** at Meissen in Saxony (1471–83).

Among town halls, most of which date from the fourteenth and fifteenth centuries, may be mentioned those of Ratisbon Regensburg), Münster and Hildesheim, Halberstadt, **Bruns-**

wick, Lübeck, and Bremen—the last two of brick. These, and the city gates, such as the **Spahlenthor** at Basle (Switzerland) and others at Lübeck and Wismar, are generally very picturesque edifices. Many fine guildhalls were also built during the last two centuries of the Gothic style; and dwelling-houses of the same period, of quaint and effective design, with stepped or traceried gables, lofty roofs, openwork balconies and corner turrets, are to be found in many cities. Nuremberg is especially rich in these.

THE NETHERLANDS, as might be expected from their position, underwent the influences of both France and Germany. During the thirteenth century, largely through the intimate monastic relations between Tournay and Noyon, the French influence became paramount in what is now Belgium, while Holland remained more strongly German in style. Of the two countries Belgium developed by far the most interesting architecture. The Flemish town halls and guildhalls merit particular attention for their size and richness, exemplifying in a worthy manner the wealth and independence of the Flemish weavers and merchants in the fifteenth century.

CATHEDRALS AND CHURCHES. The earliest purely Gothic edifice in Belgium was the choir of **Ste. Gudule** (1225) at Brussels, followed in 1242 by the choir and transepts of **Tournay,** designed with pointed vaults, side chapels, and a complete *chevet*. The transept-ends are round, as at Noyon. These were surpassed in splendor by the **Cathedral** of **Antwerp** (1352–1422), remarkable for its seven-aisled nave and narrow transepts. It covers some 70,000 square feet, but its great size is not as effective internally as it should be, owing to the poverty of the details and the lack of finely felt proportion in the various parts. The late west front (1422–1518) displays the florid taste of the wealthy Flemish burgher population of that period, but is so rich and elegant, especially its lofty and slender north spire, that its over-decoration is pardonable.

The cathedral of **St. Rombaut** at Malines (choir, 1336; nave, 1454–64) is a more satisfactory church, though smaller and with its western tower incomplete. The cathedral of **Louvain** belongs to the same period (1373–1433). **St. Wandru** at Mons (1450–1528) and **St. Jacques** at Liège (1522–58) are interesting parish churches of the first rank, remarkable especially for the use of color in their internal decoration, for their late tracery and ribbed vaulting, and for the absence of Renaissance details at that late period.

TOWN HALLS: GUILDHALLS. These were really the most characteristic Flemish edifices, and are in most cases the most conspicuous monuments of their respective cities. The **Cloth Hall of Ypres** (1200–1304; destroyed in the recent war) was the earliest and most imposing among them; similar halls were built not much later at **Bruges, Malines** and **Ghent.** The town halls were mostly of later date, the earliest being that of **Bruges** (1377). The town hall of **Brussels** with its imposing and graceful tower, of **Louvain** (1448–63; Fig. 149) and of **Oudenärde** (early sixteenth century) are conspicuous monuments of this class. The town hall of **Middelburg,** Holland, belongs also in this group.

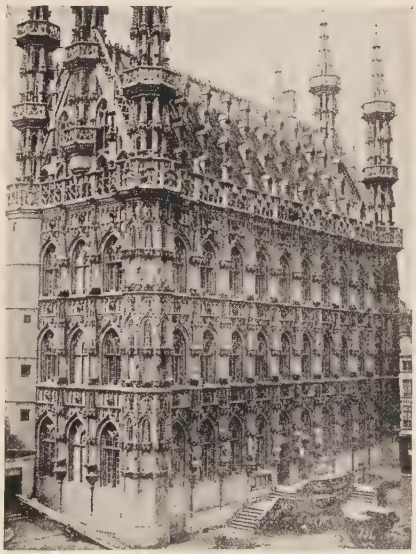

FIG. 149.—TOWN HALL, LOUVAIN.

In general, the Gothic architecture of Belgium presents the traits of a borrowed style, which did not undergo at the hands of its borrowers any radically novel or fundamental development. The structural design is usually lacking in vigor and organic significance, but the details are often graceful and well designed, especially on the exterior. The tendency was often towards over-elaboration in the later works.

WAR HAVOC. In Belgium, as in Northern France, the late war resulted in a terrible destruction of historic edifices. The cities of Louvain and Ypres were to a great extent wiped out, although fortunately the town hall of Louvain was spared. The Cloth Hall and Cathedral of Ypres were demolished, the Cathedral of Malines wrecked, and scores of churches, town halls, guild-houses, and other monuments of both the Middle Ages and the Renaissance destroyed or irremediably damaged.

The Gothic architecture of **Holland** and of the **Scandinavian** countries offers so little that is highly artistic or inspiring in character, that space cannot well be given in this work even to an enumeration of its chief monuments.

SPAIN AND PORTUGAL. The beginnings of Gothic architecture in Spain followed close on the series of campaigns from 1217 to 1252, which began the overthrow of the Moorish dominion. With the resulting spirit of exultation and the wealth accruing from booty, came a rapid development of architecture, mainly under French influence. Gothic architecture was at this date, under St. Louis, producing in France some of its noblest works. The great cathedrals of **Toledo** and **Burgos,** begun between 1220 and 1230, were the earliest purely Gothic churches in Spain. **San Vincente** at Avila and the **Old Cathedral** at Salamanca, of somewhat earlier date, present a mixture of round- and pointed-arched forms, with the Romanesque elements predominant (see page 187). **Toledo Cathedral,** planned in imitation of Notre Dame and Bourges, but exceeding them in width, covers 75,000 square feet, and

thus ranks among the largest of European cathedrals. Internally it is well proportioned and well detailed, recalling the early French masterworks, but its exterior is less commendable.

In the contemporary cathedral of Burgos the exterior is at least as interesting as the interior. The west front, of German design, suggests Cologne by its twin openwork spires (Fig. 150); while the crossing is embellished with a sumptuous dome and lantern or *cimborio*, added as late as 1567. The chapels at the east end, especially that of the Condestabile (1487), are ornate to the point of overloading, a fault to which late Spanish Gothic work is peculiarly prone. Other thirteenth-century cathedrals are those of **Leon** (1260), **Valencia** (1262), and **Barcelona** (1298), all exhibiting strongly the French influence in the plan, vaulting and vertical proportions. The models of Bourges and Paris with their wide naves, lateral chapels and semicircular chevets were followed in the cathedral of Barcelona, in a number of fourteenth-century churches both there and elsewhere, and in the sixteenth-century cathedral of Segovia. In Sta. Maria del Pi at Barcelona, in the collegiate church at Manresa, and in the imposing nave of the **Cathedral** of **Gerona** (1416, added to

FIG. 150.—FAÇADE OF BURGOS CATHEDRAL.

the choir of 1312, the latter by a Southern French architect, Henri de Narbonne), the influence of Alby in southern France (see p. 208) is discernible. These are one-aisled churches with internal buttresses separating the lateral chapels. The nave of Gerona is 75 feet wide, or double the average clear width of French or English cathedral naves. The resulting effect is not commensurate with the actual dimensions, and shows the inappropriateness of Gothic details for compositions so Roman in breadth and simplicity.

SEVILLE. The largest single edifice in Spain, and the largest church built during the Middle Ages in Europe, is the **Cathedral** of **Seville,** begun in 1401 on the site of a Moorish mosque. It covers 124,000 square feet, measuring 415 × 298 feet, and is a simple rectangle comprising five aisles with lateral chapels. The central aisle is 56 feet wide and 145 high; the side aisles and chapels diminish gradually in height, and with the uniform piers in six rows produce an imposing effect, in spite of the lack of transepts or chevet. The somewhat similar **New Cathedral** of Salamanca (1510–1560) shows the last struggles of the Gothic style against the incoming tide of the Renaissance.

LATER MONUMENTS. These all partake of the over-decoration which characterized the fifteenth century throughout Europe. In Spain this decoration was even less structural in character, and more purely fanciful and arbitrary, than in the northern lands; but this very rejection of all constructive pretense gives it a peculiar charm and goes far to excuse its extravagance (Fig. 151). Decorative vaulting-ribs were made to describe geometric patterns of great elegance. Some of the late Gothic vaults by the very exuberance of imagination shown in their designs, almost disarm criticism. Instead of suppressing the walls as far as possible, and emphasizing all the vertical lines, as was done in France and England, the later Gothic architects of Spain delighted in broad wall-

surfaces and multiplied horizontal lines. Upon these surfaces they lavished carving without restraint and without any organic relation to the structure of the building. The arcades of cloisters and interior courts (*patios*) were formed with arches of fantastic curves resting on twisted columns; and internal chapels in the cathedrals were covered with minute carving of exquisite workmanship, but wholly irrational design. Probably the influence of Moorish decorative art accounts in part for these extravagances. The eastern chapels in Burgos Cathedral, the votive church of **San Juan de los Reyes** (1476) at Toledo and many portals of churches, convents and hospitals illustrate these tendencies.

FIG. 151.—DETAIL, PORTAL S. GREGORIO, VALLADOLID.

PORTUGAL is an almost unknown land architecturally. It seems to have adopted the Gothic styles very late in its history. Two monuments, however, are conspicuous, the convent churches of **Batalha** (1390–1520) and **Belem,** both marked by an extreme overloading of carved

ornament. The **Mausoleum** of **King Manoel** in the rear of the church at Batalha is, however, a noble creation, possibly by an English master. It is a polygonal edifice, some 67 feet in diameter, and well designed, though covered with a too profuse and somewhat mechanical decoration of panels, pinnacles, and carving.

MONUMENTS not dated in the text. GERMANY: (C = cathedral; A. = abbey; tr. = transepts).—13th century: Transitional churches: Bamberg C.; Naumburg C.; Collegiate Church, Fritzlar; St. Castor, Coblentz; Heisterbach A.;—early 13th century. St. Gereon, Cologne, choir 1212-27; Sts. Peter and Paul, Neuweiler, 1250; Altenburg C., choir 1255-65 (finished 1379); Wimpfen-im-Thal church 1259-78; St. Lawrence, Nuremberg, 1260 (choir 1439-77); St. Catherine, Oppenheim, 1262-1317 (choir 1349); Xanten, Collegiate Church, 1263; Toul C., 1272; Meissen C., choir 1274 (nave 1312-42); St. Mary's, Lübeck, 1276; Dominican churches at Coblentz, Gebweiler; and in Switzerland at Basle, Berne, and Zürich.—14th century: Wiesenkirche, Söst, 1313; Osnabrück C., 1318 (choir 1420); St. Mary's, Prentzlau, 1325; Augsburg C., 1321-1431; Metz C., 1330 rebuilt (choir 1486); Zwettl C., 1343; Prague C., 1344; church at Thann, 1351 (tower finished 16th century); Liebfrauenkirche, Nuremberg, 1355-61; St. Sebald, Nuremberg, 1361-77 (nave Romanesque); Minden C., choir 1361; Sta. Barbara, Kuttenberg, 1386 (nave 1483); Erfurt C.; St. Elizabeth, Kaschau; Schlettstadt C.,—15th century: Frauenkirche, Esslingen, 1406 (finished 1522); Minster at Berne, 1421; Peter-Paulskirche, Görlitz, 1423-97; St. Mary's, Stendal, 1447; Frauenkirche, Munich, 1468-88.

SECULAR MONUMENTS: Moldau-bridge and tower, Prague, 1344; Nassau House, Nuremberg, 1350; College of the Jagellons, Prague, late 15th century; Council houses (Rathhaüser) at Nuremburg, 1340; Brunswick, 1393; Cologne, 1407-15; Basle, Breslau; Lübeck; Münster; Prague; Ulm; City Gates of Basle, Cologne, Ingolstadt, Lucerne.

THE NETHERLANDS: Notre Dame, Bruges, 1239-97; Notre Dame, Tongres, 1240; Utrecht C., 1251; St. Martin, Ypres, 1254; Notre Dame, Dinant, 1255; church at Aerschot, 1337; St. Lawrence, Rotterdam, 1472; other 15th century churches—St. Bavon, Haarlem; St. Catherine, Utrecht; St. Bavon, Ghent (tower 1461); St. Jacques, Ant-

werp; St. Pierre, Louvain; St. Jacques, Bruges; churches at Arnheim; Breda, Delft; St. Jacques, Liège, 1522.

SECULAR: Cloth-hall, Bruges, 1284; town hall, Brussels, 1401-55; Ständehuis, Delft, 1528; cloth-hall at Malines.

SPAIN: 13th century: Tarragona C., 1235; Avila C., vault and N. portal 1292-1353 (finished 14th century); St. Esteban, Burgos; church at Las Huelgas.—14th century: S. M. del Mar, Barcelona, 1328-83; S. M. del Pino, Barcelona, same date; Collegiate Church, Manresa, 1328; Oviedo C., 1388 (tower very late); Pampluna C., 1397 (mainly 15th century).—15th century: La Seo, Saragossa (finished 1505); S. Pablo, Burgos, 1415-35; El Parral, Segovia, 1459; San Pablo, Valladolid, 1463; Astorga C., 1471; Carthusian church, Miraflores, 1488; San Juan, and La Merced, Burgos; Xerez de la Frontera.—16th century: Huesca C., 1515; Segovia C., 1522; S. Juan de la Puerta, Zamorra.

SECULAR: Porta Serraños, Valencia, 1349; Casa Consistorial, Barcelona, 1369-78; Casa de la Disputacion, same city; Casa de las Lonjas, Valencia, 1482.

PORTUGAL: Alcobaça A., nave 1211 (choir 1158, Romanesque); cloister 1310; Sé A. at Evora, 1185-1211; cloister 14th century; churches at Coimbra, Santarem, Thomar; Guarda C., 15th century.

CHAPTER XIX

GOTHIC ARCHITECTURE IN ITALY

BOOKS RECOMMENDED: As before, Reber. Also, Cummings, *A History of Architecture in Italy.* De Fleury, *La Toscane au moyen âge.* Gruner, *The Terra Cotta Architecture of Northern Italy.* Jackson, *Gothic Architecture.* Mothes, *Die Baukunst des Mittelalters in Italien.* Norton, *Historical Studies of Church Building in the Middle Ages.* Osten, *Bauwerke der Lombardei.* Ruskin, *Stones of Venice.* Street, *Brick and Marble Architecture of Italy.* Willis, *Remarks on the Architecture of the Middle Ages especially of Italy.*

GENERAL CHARACTER. The various Romanesque styles which had grown up in Italy before 1200 lacked that unity of principle out of which alone a new and homogeneous national style could have been evolved. Each province practised its own style and methods of building, long after the Romanesque had given place to the Gothic in Western Europe. The Italians cared little for Gothic structural principles. Their predilection for walls, for broad spaces and large units, and for small rather than large windows, was in every respect opposed to the tendencies of Gothic design, and architecture was for them an art of decorative rather than of constructive logic. Provided they could secure spaces for mosaic and wall-painting, they were content to tie their vaults with unsightly tie-rods and to make their church façades mere screen-walls, in form wholly unrelated to the buildings behind them.

When, therefore, under foreign influences pointed arches, tracery, clustered shafts, crockets, and finials came into use,

it was merely as an imported fashion. Even when foreign architects (usually Germans) were employed, the composition, and in large measure the details, were still Italian and provincial. The church of St. Francis of Assisi (1228–53, by *Jacobus of Meran*, a German, superseded later by an Italian, Campello), and the cathedral of Milan (begun 1389, perhaps by *Henry of Gmünd*), are conspicuous illustrations of this. Rome built basilicas all through the Middle Ages. Tuscany continued to prefer flat walls veneered with marble to the broken surfaces and deep buttresses of France and Germany. Venice developed a Gothic style of façade-design wholly her own (see p. 279). Nowhere but in Italy could two such utterly diverse structures as the Certosa at Pavia and the cathedral at Milan have been erected at the same time.

CLIMATE AND TRADITION. Two further causes militated against the domestication of Gothic art in Italy. The first was the brilliant climate, which seems to demand cool, dim interiors, thick walls, and small windows, instead of the vast traceried windows of Gothic design. The second obstacle was the persistence of classic traditions, both in construction and decoration. The spaciousness and breadth of interior planning which characterized Roman design, and its amplitude of scale in every feature, seem never to have lost their hold on the Italians. The narrow lofty aisles, multiplied supports and minute detail of the Gothic style were repugnant to the classic predilections of the Italian builders. The Roman acanthus and Corinthian capital were constantly imitated in their Gothic buildings, and the round arch continued all through the Middle Ages to be used in conjunction with the pointed arch (Figs. 155, 156).

EARLY BUILDINGS. Gothic forms were first introduced into Italy through the agency of the monastic orders, especially the Cistercian. The churches and some other buildings of the Cis-

tercian monasteries of Casamari, **Fossanova** and San Galgano betray unmistakably in their interior design the hand of French builders. They date from the early years of the thirteenth century. The Certosa at Chiaravelle near Milan (1208–21) and most of the churches erected by the mendicant orders of the Franciscans (founded 1210) and Dominicans (1216) were built with ribbed vaults and pointed arches. The example set by these orders contributed greatly to the general adoption of the foreign style. **S. Francesco** at **Assisi,** already mentioned, was the first Gothic Franciscan church, although **S. Francesco** at **Bologna,** begun a few years later, was finished a little earlier. The Dominican church of **SS. Giovanni e Paolo** (1260) and the Franciscan church of **Sta. Maria Gloriosa dei Frari** (1250–80), both at Venice, were rebuilt 1388–1400. **Sta. Maria Novella** at Florence (1278), and **Sta. Maria sopra Minerva** at Rome (1280), both by the brothers *Sisto* and *Ristoro*, and **S. Anastasia** at Verona (1261) are the masterpieces of the Dominican builders. **S. Andrea** at **Vercelli** in North Italy, begun in 1219 under a foreign architect, is an isolated early example of lay Gothic work. Though somewhat English in its plan, and provided with two western spires in the English manner, it is in all other respects thoroughly Italian in aspect. The church at Asti, begun in 1229, suggests German models by its high side walls and narrow windows.

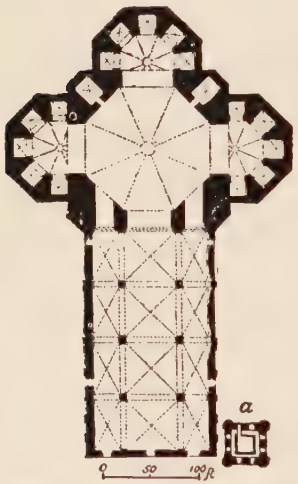

FIG. 152.—DUOMO AT FLORENCE. PLAN.
a, Campanile.

CATHEDRALS. The greatest monuments of Italian Gothic design are the cathedrals, in which, even more than was the case in France, the highly developed civic pride of the municipalities expressed itself. Chief among these half civic, half religious monuments are the cathedrals of **Sienna** (begun in 1243), **Arezzo** (1278), **Orvieto** (1290), **Florence** (the **Duomo,** Sta. Maria del Fiore), **Lucca** (S. Martino, 1350), **Milan** 1389–1418), and **S. Petronio** at Bologna (1390). They are all of imposing size; Milan is the largest of all Gothic cathedrals except Seville. S. Petronio was planned to be 600 feet long, the present structure with its three broad aisles and flanking chapels being merely the nave of the intended edifice. The Duomo at Florence (Fig. 153), begun in 1296 by Arnolfo di Cambio* continued on an enlarged plan after his death by *Giotto* and *Talenti* (1303–1348, 1357–1408) was crowned with its colossal dome 1420–64 (see p. 288). It is 500 feet long and covers 82,000 square feet; the nave has a span of 60 feet, while the octagon at the crossing is 143 feet in diameter. The effect of these colossal dimensions is, however, as in a number of these large Italian interiors, singu-

FIG. 153.—NAVE OF DUOMO AT FLORENCE.

* Called by Vasari "Arnolfo di Lapo."

larly belittled by the bareness of the walls, by the great size of the constituent parts of the composition, and by the lack of architectural subdivisions and multiplied detail to serve as a scale by which to gauge the scale of the *ensemble*.

PLANS. The wide diversity of local styles in Italian architecture appears in the plans as strikingly as in the details. In general one notes a love of spaciousness which expresses itself in a sometimes disproportionate breadth, and in the wide spacing of the piers. The polygonal chevet with its radial chapels is but rarely seen; **S. Lorenzo** at Naples (1275), Sta. Maria dei Servi and **S. Francesco** at Bologna (1230) are among the most important examples. More frequently the chapels form a range along the east side of the transepts, especially in the Franciscan churches, which otherwise retain many basilican features. A comparison of the plans of S. Andrea at Vercelli, the Duomo at Florence, the cathedrals of Sienna and Milan, S. Petronio at Bologna and the Certosa at Pavia (Fig. 154), sufficiently illustrates the variety of Italian Gothic plan-types.

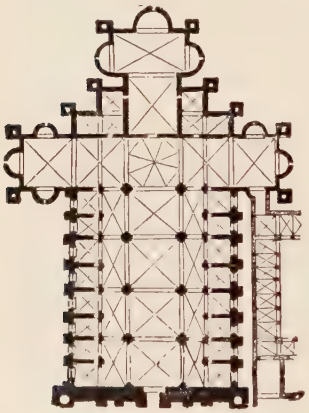

FIG. 154.—PLAN OF CERTOSA AT PAVIA.

INTERIOR TREATMENT. It was doubtless intended to cover these large unbroken wall-surfaces and the vast expanse of the vaults over naves of extraordinary breadth with paintings and color decoration. This would have remedied their present nakedness and lack of interest, but it was only in a very few instances carried out. The double church of S. Francesco at Assisi, decorated by Cimabue, Giotto, and other early

Tuscan painters, the Arena Chapel at Padua, painted by Giotto, the **Spanish Chapel** of S. M. Novella, Florence, and the east end of S. Croce, Florence, are illustrations of the splendor of effect possible by this method of decoration. The bareness of effect in other unpainted interiors was emphasized by the plainness of the vaults destitute of minor ribs. The transverse ribs were usually broad arches with flat soffits, and the vaulting was often sprung from so low a point as to leave no room for a triforium. Mere bull's-eyes often served for clearstory windows, as in S. Anastasia at Verona, S. Petronio at Bologna, and the Florentine Duomo. The cathedral of **S. Martino** at Lucca (Fig. 155) is one of the most complete and elegant of Italian Gothic interiors, having a genuine triforium with traceried arches. Even here, however, there are round arches without mouldings, flat pilasters, broad transverse ribs recalling Roman arches, and insignificant bull's-eyes in the clearstory.

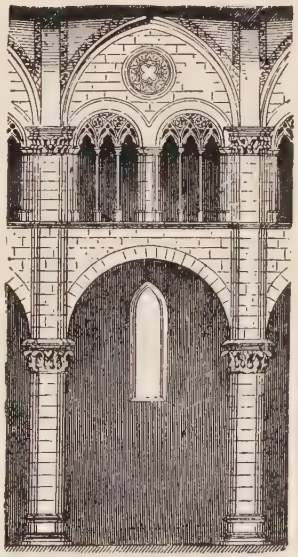

FIG. 155.—ONE BAY, NAVE OF CATHEDRAL OF SAN MARTINO, LUCCA.

The failure to produce adequate results of scale in the interiors of the larger Italian churches has been already alluded to. It is strikingly exemplified in the Duomo at Florence, the nave of which is 60 feet wide, with four pier-arches each over 55 feet in span. The immense vault, in square bays, starts from the level of the tops of these arches. The interior (Fig. 153) is singularly naked and cold, giving no conception of its vast dimensions.

The colossal dome is an early work of the Renaissance (see p. 287). It is not known how *Fr. Talenti*, who in 1357 enlarged and vaulted the nave and planned the east end, proposed to cover the great octagon. The east end is the most effective part of the design both internally and externally, owing to the relatively moderate scale of the fifteen chapels which surround the apsidal arms of the cross. In S. Petronio at Bologna, begun 1390 by *Master Antonio*, the scale is better handled. The nave, 300 feet long, is divided into six bays, each embracing two side chapels. It is 46 feet wide and 132 feet high, proportions which approximate those of the French cathedrals, and produce an impression of size somewhat unusual in Italian churches. **Orvieto** has internally little that suggests Gothic architecture; like many Franciscan and Dominican churches it is really a timber-roofed basilica with a few pointed windows. The mixed Gothic and Romanesque interior of **Sienna Cathedral** (Fig. 156), with its round arches and six-sided dome, unsymmetrically placed over the crossing, is one of the most impressive creations of Italian mediæval art. Alternate courses of black and white marble add richness but not repose to the effect of this interior; the same is true of Orvieto, and of some other churches. The basement baptistery of **S. Giovanni,** under the east end of Sienna Cathedral, is much more purely Gothic in detail.

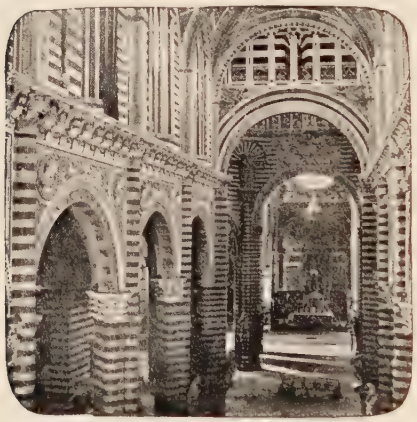

FIG. 156.—INTERIOR OF SIENNA CATHEDRAL.

In these, and indeed in most Italian interiors, the main interest centres less in the excellence of the composition than in the accessories of pavements, pulpits, choir-stalls, and sepulchral monuments. In these the decorative fancy and skill of the Italians found unrestrained exercise, and produced works of surpassing interest and merit.

EXTERNAL DESIGN. The greatest possible disparity generally exists between the sides and west fronts of the Italian churches. With few exceptions the flanks present nothing like the variety of sky-line and of light and shade customary in northern and western lands. The side walls are high and flat, plain, or striped with black and white masonry (Sienna, Orvieto), or veneered with marble (Duomo at Florence) or decorated with surface-ornament of thin pilasters and arcades (Lucca). The clearstory is low; the roof low-pitched and hardly visible from below. Color, rather than structural richness, is generally sought for: Milan Cathedral is almost the only exception, and goes to the other extreme, with its seemingly countless buttresses, pinnacles and statues.

The façades, on the other hand, were treated as independent decorative compositions, and were in many cases remarkably beautiful works, though having little or no organic relation to the main structure. The most celebrated are those of **Sienna** (cathedral begun 1243; façade 1284, by *Giovanni Pisano;* Fig. 157) and **Orvieto** (begun 1290, by *Lorenzo Maitani,* façade 1310). Both of these are sumptuous polychromatic compositions in marble, designed on somewhat similar lines, with three high gables fronting the three aisles, with deeply recessed portals, pinnacled turrets flanking nave and aisles, and a central circular window. That of Orvieto is furthermore embellished with mosaic pictures, and is the more brilliant in color of the two. The mediæval façades of the Florentine Gothic churches were never completed; but the elegance of the paneling and of the tracery with twisted shafts

in the flanks of the cathedral and the florid beauty of its side doorways (late fourteenth century) would doubtless if realized with equal success on the façades have produced strikingly beautiful results. The modern façade of the Duomo, by the late *De Fabris* (1887) is an excellent version of the style so applied. The front of Milan Cathedral shows a mixture of Gothic and Renaissance forms, having been completed only in the early nineteenth century.* **Ferrara Cathedral,** although internally transformed in the last century, retains its picturesque but utterly illogical thirteenth-century three-gabled and arcaded screen front. The **Cathedral of Genoa** (San Lorenzo, early fourteenth century) presents Gothic windows and deeply recessed portals in a façade built in black and white bands, like Sienna Cathedral and many churches in Pistoia and Pisa.

FIG. 157.—FAÇADE OF SIENNA CATHEDRAL.

Externally the most important feature was frequently a cupola or dome over the crossing. That of Sienna has already been mentioned; that of Milan is a sumptuous many-pinnacled structure terminating in a spire 300 feet high. The **Certosa** at Pavia (Fig. 158) and the earlier Carthusian church of Chiaravalle have internal cupolas or domes covered externally

* The proposed new Gothic façade designed by Brentano (d. 1889) has never been carried out.

by many-storied structures ending in a tower dominating the whole edifice. These two churches, like many others in Lombardy, the Æmilia and Venetia, are built of brick, moulded terra-cotta being effectively used for the cornices, string-courses, jambs and ornaments of the exterior. The Certosa at Pavia (1396) is contemporary with the cathedral of Milan, to which it offers a surprising contrast, both in style and

FIG. 158.—EXTERIOR OF THE CERTOSA, PAVIA.

material. It is wholly built of brick and terra-cotta, and, save for its ribbed vaulting, possesses hardly a single Gothic feature or detail. Its arches, mouldings, and cloisters suggest both the Romanesque and the Renaissance styles by their semi-classic character.

ORNAMENT. Applied decoration plays a large part in all Italian Gothic designs. Inlaid and mosaic patterns and panelled veneering in colored marble are essential features of the exterior decoration of most Italian churches. Florence

offers a fine example of this treatment in the Duomo, and in its accompanying **Campanile** or bell-tower, designed by *Giotto* (1335) and completed by *Gaddi* and *Talenti*. This beautiful tower is an epitome of Italian Gothic decorative art. Its inlays, mosaics, and veneering are treated with consummate elegance, and combined with incrusted reliefs of great beauty. The tracery of this monument and of the side windows of the adjoining cathedral is lighter and more graceful than is common in Italy. Its beauty consists, however, less in movement of line than in richness and elegance of carved and inlaid ornament. In the **Or San Michele**—a combined chapel and granary in Florence dating from 1335—the tracery is far less light and open. In general, except in churches like the cathedral of Milan, built under German influences, the tracery in secular monuments is more successful than in ecclesiastical structures. Venice developed the designing of tracery to greater perfection in her palaces than any other Italian city (see below).

FIG. 159.—UPPER PART OF CAMPANILE, FLORENCE.

MINOR WORKS. Italian Gothic art found freer expression

in semi-decorative works, like tombs, altars and votive chapels, than in more monumental structures. The fourteenth century was particularly rich in canopy tombs, mostly in churches, though some were erected in the open air, like the celebrated **Tombs of the Scaligers** in Verona (1329–1380). Many of those in churches in and near Rome, and others in south Italy, are especially rich in inlay of *opus Alexandrinum* upon their twisted columns and panelled sarcophagi. The family of the *Cosmati* acquired great fame for work of this kind during the thirteenth century. One of the finest minor works of the fourteenth century was the superb **Tabernacle** in the church of **Or San Michele** at Florence by Orcagna (1350–59)

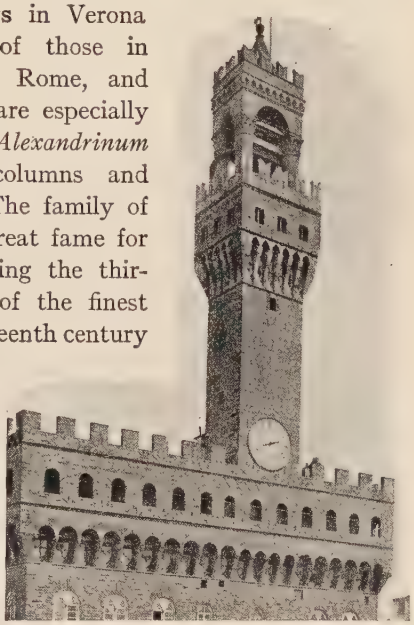

FIG. 160.—UPPER PART OF PALAZZO VECCHIO, FLORENCE.

TOWERS. The Italians always preferred the square tower to the spire, and in most cases treated it as an independent campanile. Following Early Christian and Romanesque traditions, these square towers were usually built with plain sides unbroken by buttresses, and terminated in a flat roof or a low and inconspicuous cone or pyramid. The Campanile at Florence already mentioned is by far the most beautiful of these designs (Fig. 159). The campaniles of Sienna, Lucca, and Pistoia are built in alternate white and black courses, like the adjoining cathedrals. Verona and Mantua have towers with octagonal

lanterns. In general, these Gothic towers differ from the earlier Romanesque models chiefly in the forms of their openings and their decorative details. They are picturesque and well proportioned, but lack the poetry and variety of the Western Gothic towers and spires.

SECULAR MONUMENTS. In their public halls, open *loggias*, and domestic architecture the Italians were able to develop the

FIG. 161.—LOGGIA DEI LANZI, FLORENCE.

application of Gothic forms with greater freedom than in their church-building, because unfettered by traditional methods of design. The early and vigorous growth of municipal and popular institutions led, as in the Netherlands, to the building of two classes of public halls—the police headquarters or *Podestà*, and the council hall, variously called *Palazzo Communale, Pubblico,* or *del Consiglio.* The *podestàs*, as the seat of authority, usually have a severe and fortress-like character; the **Bargello** at Florence is the most important example, dating in part from 1255. Even more imposing is the well-known **Palazzo Vecchio,** the council hall of the same city (1298, by

Arnolfo del Cambio; Fig. 160), with a tower which, rising 308 feet in the air, overhangs the street fully 6 feet, its front wall resting on the face of the powerfully corbelled cornice of the palace. The court and most of the interior were remodelled in the sixteenth century. At Sienna is a somewhat similar structure in brick, the **Palazzo Pubblico,** with a superb slender tower of brick and marble. At Pistoia the Podestà and the Communal Palace stand opposite each other. At Perugia, Bologna, and Viterbo are others of some importance; while Bergamo, Como, Cremona, Piacenza and other towns in Lombardy possess smaller halls with open arcades below, of a more elegant and pleasing aspect. More successful still are the open loggias or tribunes erected for the gatherings of public bodies. The noble **Loggia dei Lanzi** at Florence (1376, by *Benci di Cione* and *Simone di Talenti*) is the largest and most famous of these open vaulted halls, of which several exist in Florence and Sienna. Gothic only in their minor details, they are Romanesque or semi-classic in their broad round arches and strong horizontal lines and cornices (Fig. 161).

PALACES AND HOUSES: VENICE. The northern cities, especially Pisa, Florence, Sienna, Bologna, and Venice, are rich in mediæval public and private palaces and dwellings in brick or marble, in which pointed windows and open arcades are used with excellent effect. In Bologna and Sienna (*e. g.* Grotanelli, Saraceni, and Buonsignori palaces) brick is used in conjunction with details executed in moulded terra-cotta, in a highly artistic and effective way. Viterbo, nearer Rome, also possesses many interesting houses, with street arcades and open stairways or stoops leading to the main entrance.

The security and prosperity of Venice in the Middle Ages, and the ever present influence of the sun-loving East, made the massive and fortress-like architecture of the inland cities unnecessary. Abundant openings, large windows full of tracery of great lightness and elegance, projecting balconies and the

freest use of marble veneering and inlay—a survival of Byzantine traditions of the twelfth century (see p. 136)—give to the Venetian houses and palaces an air of gayety and elegance found nowhere else. While there are few Gothic churches of importance in Venice, the number of mediæval houses and palaces is very large. Chief among these is the **Doge's Palace** (Fig. 162), adjoining the church of St. Mark. The two-storied arcades of the west and south fronts date from 1354, and originally stood out from the main edifice, which was widened in 1423–38, when the present somewhat heavy walls, laid up in red, white and black marble in a species of quarry pattern, were built over the arcades; the interior courtyard largely rebuilt in the fifteenth and sixteenth centuries.

FIG. 162.—WEST FRONT OF DOGE'S PALACE, VENICE.

These arcades are beautiful designs, combining massive strength and grace in a manner quite foreign to Western Gothic ideas. Lighter and more ornate is the **Cà d'Oro,** on the Grand Canal; while the Foscari, Contarini-Fasan, Cavalli, and Pisani palaces, among many others, are admirable examples of the style. In most of these a traceried loggia occupies the central part flanked by walls incrusted with marble and pierced by Gothic windows with carved mouldings, borders, and balconies. The Venetian Gothic owes its success largely

to the absence of structural difficulties to interfere with the purely decorative development of Gothic details.

MONUMENTS (additional to those named in text). 13th century: Cistercian abbey of S. Martino al Cimino, *cir.* 1208; Sta. Chiara, Assisi, 1250; Sta. Trinità, Florence, 1250; S. Antonio, Padua, begun 1256; Naples C., 1272-1314 (façade 1299; portal 1407; much altered later); Campo Santo, Pisa, 1278-83; Arezzo C., 1278; S. Eustorgio, Milan, 1278; Sta. Croce, Florence, 1294 (façade 1863).—14th century: S. Francesco, Sienna, 1310; San Domenico, Sienna, about same date; S. Giovanni in Fonte, Sienna, 1317; S. M. della Spina, Pisa, 1323; Como C., 1396 (choir and transepts 1513); Verona C.; S. Fermo Maggiore, Verona; S. Francesco, Pisa; S. Lorenzo, Vicenza.—15th century: Perugia C.; S. M. delle Grazie, Milan, 1470 (cupola and exterior E. part later).

Secular Buildings: Pal. Pubblico, Cremona, 1245; Pal. Podestà (Bargello), Florence, 1255 (enlarged 1333-45); Pal. Giureconsulti, Cremona, 1292; Broletto, Monza, 1293; Loggia dei Mercanti, Bologna, 1294; Broletto, Como; Loggia del Bigallo, Florence, 1337; Broletto, Bergamo, 14th century; Loggia dei Nobili, Sienna, 1407; Pal. Pubblico, Udine, 1457; Loggia dei Mercanti, Ancona; Pal. del Governo, Bologna; Pal. Pepoli, Bologna; Palaces Conte Bardi, Davanzati, Capponi, all at Florence; at Lucca, Pal. Guinigi; at Sienna, Pal. Tolomei, 1205; Pal. Salimbeni, at Venice, Pal. Contarini-Fasan, Cavalli, Foscari, Pisani, and many others; others in Padua and Vicenza.

CHAPTER XX

EARLY RENAISSANCE ARCHITECTURE IN ITALY

BOOKS RECOMMENDED: Anderson, *Architecture of the Renaissance in Italy.* Burckhardt, *The Civilization of the Renaissance; Der Cicerone.* Cellesi, *Sei Fabbriche di Firenze.* Cicognara, *Le Fabbriche più cospicue di Venezia.* Durm, *Die Baukunst der Renaissance in Italien* (in *Hdbuch. d. Arch.*). Fergusson, *History of Modern Architecture.* Geymüller and Stegmann, *Die Architektur der Renaissance in Toscana;* (also in French) *La Renaissance en Toscane.* Kinross, *Details from Italian Buildings.* Meyer, *Oberitalienische Frührenaissance: Bauten und Bildwerke der Lombardei.* Moore, *Character of Renaissance Architecture.* Müntz, *La Renaissance en Italie et en France à l'époque de Charles VIII.* Palustre, *L'Architecture de la Renaissance.* Schütz, *Die Renaissance in Italien.* Geoffrey Scott, *The Architecture of Humanism.* Symonds, *The Renaissance of the Fine Arts in Italy.* Tosi and Becchio, *Altars, Tabernacles, and Tombs.*

THE CLASSIC REVIVAL. The abandonment of Gothic architecture in Italy and the substitution in its place of forms derived from classic models were occasioned by no sudden or merely local revolution. The Renaissance was the result of a profound intellectual movement, whose roots may be traced far back into the Middle Ages, and which manifested itself first in Italy simply because there the conditions were most propitious. It spread through Europe just as rapidly as similar conditions appearing in other countries prepared the way for it. The essence of this far-reaching movement was the protest of the individual reason against the trammels of external and

arbitrary authority—a protest which found its earliest organized expression in the Humanists. In its assertion of the intellectual and moral rights of the individual, the Renaissance laid the foundations of modern civilization. The same spirit, in rejecting the authority and teachings of the Church in matters of purely secular knowledge, led to the questionings of the precursors of modern science and the discoveries of the early navigators. But in nothing did the reaction against mediæval scholasticism and asceticism display itself more strikingly than in the joyful enthusiasm which marked the pursuit of classic studies. The long-neglected treasures of classic literature were reopened and turned to new account in the fourteenth century by the immortal trio—Dante, Petrarch, and Boccaccio. The joy of living, the delight in beauty and pleasure for their own sakes, the exultant awakening to the sense of personal freedom, which came with the bursting of mediæval fetters, found in classic art and literature their most sympathetic expression. It was in Italy, where feudalism had never fully established itself, and where the municipalities and guilds had developed, as nowhere else, the sense of civic and personal freedom, that these symptoms first manifested themselves. In Italy, and above all in the Tuscan cities, they appeared throughout the fourteenth century in the growing enthusiasm for all that recalled the antique culture, and in the rapid advance of luxury and refinement in both public and private life.

THE RENAISSANCE OF THE ARTS. Classic Roman architecture had never lost its influence on the Italian taste. Gothic art, already declining in the West, had never been in Italy more than a borrowed garb, clothing architectural conceptions classic rather than Gothic in spirit. The antique monuments which abounded on every hand were ever present models for the artist, and to the Florentines of the early fifteenth century the civilization which had created them represented the high-

est ideal of human culture. They longed to revive in their own time the glories of ancient Rome, and appropriated with uncritical and undiscriminating enthusiasm the good and the bad, the early and the late forms of Roman art. Naïvely unconscious of the disparity between their own architectural conceptions and those they fancied they imitated, they were, unknown to themselves, creating a new style, in which the details of Roman art were fitted in novel combinations to new requirements. In proportion as the Church lost its hold on the culture of the age, this new architecture entered increasingly into the service of private luxury and public display. It created, it is true, striking types of church design, and made of the dome one of the most imposing of external features; but its most characteristic products were palaces, villas, council halls, and monuments to the great and the powerful. The personal element in design asserted itself as never before in the growth of schools and the development of styles. Thenceforward the history of Italian architecture becomes the history of the achievements of individual artists.

EARLY BEGINNINGS. Already in the thirteenth century the pulpits of Niccolo Pisano at Sienna and Pisa had revealed that master's direct recourse to antique monuments for inspiration and suggestion. In the frescoes of Giotto and his followers, and in the architectural details of many nominally Gothic buildings, classic forms had appeared with increasing frequency during the fourteenth century. This was especially true in Florence, which was then the artistic capital of Italy. Never, perhaps, since the days of Pericles, had there been another community so permeated with the love of beauty in art, and so endowed with the capacity to realize it. Her artists, with unexampled versatility, addressed themselves with equal success to goldsmith's work, sculpture, architecture and engineering—often to painting and poetry as well; and they were quick to catch in their art the spirit of the classic revival.

The new movement achieved its first architectural triumph in the dome of the cathedral of Florence (1420–64); and it was Florentine—or at least Tuscan—artists who planted in other centres the seeds of the new art that were to spring up in the local and provincial schools of Sienna, Milan, Pavia, Bologna, and Venice, of Brescia, Lucca, Perugia, and Rimini, and many other North Italian cities. The movement asserted itself late in Rome and Naples, as an importation from Northern Italy, but it bore abundant fruit in these cities in its later stages.

PERIODS. The classic styles which grew up out of the Renaissance may be divided for convenience into four periods, although, as in all the history of architecture, the date-limits assigned are wholly arbitrary, since there was nowhere any sharp dividing line between them.

The Early Renaissance or Formative Period, 1420–90; characterized by the grace and freedom of the decorative detail, suggested by Roman prototypes and applied to compositions of great variety and originality.

The High Renaissance or Formally Classic Period, 1490–1560. During this period classic details, and especially the "orders," were copied with increasing fidelity. There was increase of stateliness but some loss in freedom and delicacy of design.

The Baroque and Decline, 1560–1700; a period of classic formality characterized by the use of colossal orders, engaged columns and rather scanty and heavy decoration, followed by increasing poverty of invention in the composition and a predominance of vulgar sham and display in the decoration.

The Classic Revival; a reaction from these extravagances, showing itself in a return to the imitation of classic models, sometimes not without a certain dignity of composition and restraint in the decoration.

By many writers the name Renaissance is confined to the first period. This is etymologically correct; but the difficulty

of dissociating the first period historically from those which followed it, down to the final exhaustion of the artistic movement to which it gave birth, warrants a broader use of the term.

Another division is made by the Italians, who give the name of the *Quattrocento* to the period which closed with the end of the fifteenth century, *Cinquecento* to the sixteenth century, and *Seicento* to the seventeenth century or Decline. It has, however, become common to confine the use of the term Cinquecento to the first half of the sixteenth century.

CONSTRUCTION AND DETAIL. The architects of the Renaissance occupied themselves more with form than with construction, and rarely set themselves constructive problems of great difficulty. Although the new architecture began with the colossal dome of the cathedral of Florence, and culminated in the stupendous church of St. Peter at Rome, it was preeminently an architecture of palaces and villas, of façades and of decorative display. Constructive difficulties were reduced to their lowest terms, and the constructive framework was concealed, not emphasized, by the decorative apparel of the design. Among the masterpieces of the early Renaissance are many buildings of small dimensions, such as gates, chapels, tombs and fountains. In these the individual fancy had full sway, and produced sur-

FIG. 163.—EARLY RENAISSANCE CAPITAL, PAL. ZORZI, VENICE.

prising results by the beauty of enriched mouldings, of carved friezes with infant genii, wreaths of fruit, griffins, masks and scrolls; by pilasters covered with arabesques as delicate in modelling as if wrought in silver; by inlays of marble, panels of glazed terra-cotta, marvellously carved doors, fine stucco-work in relief, capitals and cornices of wonderful richness and variety. The Roman orders appeared only in free imitations, with panelled and carved pilasters for the most part instead of columns, and capitals of fanciful design, recalling remotely the Corinthian by their volutes and leaves (Fig. 163). Instead of the low-pitched classic pediments, there appears frequently an arched cornice enclosing a sculptured lunette. Doors and windows were enclosed in richly carved frames, sometimes arched and sometimes square. Façades were flat and unbroken, depending mainly for effect upon the distribution and adornment of the openings, mouldings, and cornices. Internally vaults and flat ceilings of wood and plaster were about equally common, the barrel vault and dome occurring far more frequently than the groined vault, except in court arches. Many of the ceilings of this period are of remarkable richness and beauty.

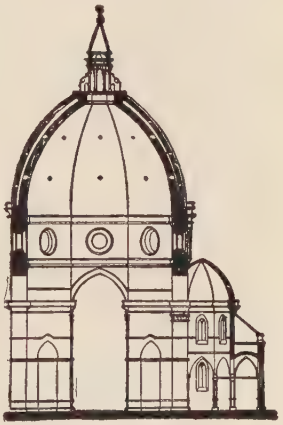

FIG. 164 —SECTION OF DOME OF DUOMO, FLORENCE.

THE EARLY RENAISSANCE IN FLORENCE: THE DUOMO. In the year 1417 a public competition was held for completing the cathedral of Florence by a dome over the immense octagon, 139 feet in diameter. *Filippo Brunelleschi*, sculptor and architect (1377–1446), who with Donatello had journeyed to Rome to study there the masterworks of ancient art, after

demonstrating the inadequacy of all the solutions proposed by the competitors, was finally permitted to undertake the gigantic task according to his own plans. These provided for an octagonal dome in two shells, connected by eight major and sixteen minor ribs, and crowned by a lantern at the top (Fig. 165). This wholly original conception, by which for the first time (outside of Moslem art) the dome was made an external feature fitly terminating in the light forms and upward movement of a lantern, was carried out between the years 1420 and 1464. Though in no wise an imitation of Roman forms, it was classic in its spirit, in its vastness and in its simplicity of line, and was made possible solely by Brunelleschi's studies of Roman design (Fig. 165).

FIG. 165.—EXTERIOR OF DOME OF DUOMO, FLORENCE.

OTHER CHURCHES. From Brunelleschi's designs were also erected the **Pazzi Chapel** in the cloister of Sta. Croce, a rectangular interior with a dome over the central part, and preceded by a vestibule with a richly decorated vault; and the two great churches of **S. Lorenzo** (1425) and **S. Spirito** (1433–1476, Fig. 166). Both of these were in reality basilicas with transepts and domical-vaulted side aisles. The central aisles were covered with flat ceilings and a low dome was built over the crossing. All the details were imitated from Roman

models, and yet the result was something entirely new, and the pendentives and domes employed by Brunelleschi were Byzantine rather than Roman. It is not known whence he derived them. The **Old Sacristy** of S. Lorenzo was another domical design of great beauty.

FIG. 166.—INTERIOR OF S. SPIRITO, FLORENCE.

From this time on the new style was in general use for church designs. *L. B. Alberti* (1404–73), who had in Rome mastered classic details more thoroughly than Brunelleschi, remodelled the church of **S. Francesco** at **Rimini** with Roman pilasters and arches, and with engaged orders in the façade, which, however, was never completed. His great work was the church of **S. Andrea** at **Mantua**, a Latin cross in plan, with a dome at the intersection (the present high dome dating, however, only from the eighteenth century) and a façade to which the conception of a Roman triumphal arch was skilfully adapted. His façade of incrusted marbles for the church of S. M. Novella at Florence was a less successful work, though its flaring consoles over the side aisles established an unfortunate precedent frequently imitated in later churches.*

A great activity in church-building marked the period be-

* Some authorities consider the volutes an addition of the 18th Century.

tween 1475 and 1490. The plans of the churches erected about this time throughout north Italy display an interesting variety of arrangements, in nearly all of which the dome is combined with the three-aisled cruciform plan, either as a central feature at the crossing or as a domical vault over each bay. Bologna and Ferrara possess a number of churches of this kind. Occasionally the basilican arrangement was followed, with columnar arcades separating the aisles. More often, however, the pier-arches were of the Roman type, with engaged columns or pilasters between them. The interiors, presumably intended to receive painted decorations, were in most cases somewhat bare of ornament, pleasing rather by happy proportions and effective vaulting or rich flat ceilings, panelled, painted and gilded, than by elaborate architectural detail. A similar scantiness of ornament is to be remarked in the exteriors, excepting the façades, which were sometimes highly ornate; the doorways, with columns, pediments, sculpture and carving, receiving especial attention. High external domes did not come into general use until the next period. In Milan, Pavia, and some other Lombard cities, the internal cupola over the crossing was, however, covered externally by a lofty structure in diminishing stages, like that of the Certosa at Pavia (Fig. 158), or that erected by Bramante for the church of S. M. delle Grazie at Milan. Very successful in design were some of the smaller churches, of the Greek cross type, with four short barrel-vaulted arms projecting from a central area covered by a dome of moderate height on pendentives. At Prato, the church of the **Madonna delle Carceri** (1495–1516), by *Giuliano da S. Gallo*, with its unfinished exterior of white marble, its simple and dignified lines, and internal embellishments in della-Robbia ware, is one of the masterpieces of this type, which was an essentially new architectural conception, although never developed to its full monumental possibilities.

In the designing of chapels and oratories the architects of

the early Renaissance attained conspicuous success, these edifices presenting fewer structural limitations and being more purely decorative in character than the larger churches. Such façades as that of **S. Bernardino** at Perugia and of the **Frati di S. Spirito** at Bologna are among the most delightful products of the decorative fancy of the fifteenth century.

FLORENTINE PALACES. The architects of this period attained conspicuous success in palace-architecture. The **Riccardi** palace in Florence (1430) marks the first step of the Renaissance in this direction. It was built for the great Cosimo di Medici by *Michelozzi* (1397–1473), a contemporary of Brunelleschi and Alberti, and a man of great talent. Its imposing rectangular façade, with widely spaced mullioned windows in two stories over a massive basement, is crowned with a classic cornice of unusual and almost excessive size. In spite of the bold and fortress-like character of the rusticated masonry of this and similar façades, and their mediæval appearance to modern eyes, they marked a revolution in style and established a type frequently imitated in later years. The courtyard, in contrast with this stern exterior, appears light and cheerful (Fig. 167). Its wall is carried on round arches borne by columns with Corinthianesque capitals, and the

FIG. 167.—COURTYARD OF RICCARDI PALACE, FLORENCE.

arcade is enriched with sculptured medallions. The **Pitti Palace,** by Brunelleschi (1435),* embodies the same ideas on a more colossal scale, but lacks the grace of an adequate cornice. A lighter and more ornate style appeared in 1460 in the **P. Rucellai,** by Alberti, in which for the first time classical pilasters in superposed stages were applied to a street façade. To avoid the dilemma of either insufficiently crowning the edifice or making the cornice too heavy for the upper range of pilasters, Alberti made use of brackets, occupying the width of the upper frieze, and converting the whole upper entablature into a cornice. But this compromise was not quite successful, and it remained for later architects in Venice, Verona, and Rome to work out more satisfactory methods of applying the orders to many-storied palace façades. In the great **P. Strozzi** (Fig. 168), erected in 1490 by *Benedetto da Majano* and *Cronaca,* the architects reverted to the earlier type of the P. Riccardi, treating it with greater refinement and producing one of the noblest palaces of Italy.

FIG. 168.—STROZZI PALACE, FLORENCE.

* Only the central portion of the palace belongs to Brunelleschi's time. It was successively enlarged in the 16th and 17th centuries.

COURTYARDS; ARCADES. These palaces were all built around interior courts, whose walls rested on columnar arcades, as in the P. Riccardi (Fig. 167). The origin of these arcades may be found in the arcaded cloisters of mediæval monastic churches, which often suggest classic models, as in those of St. Paul-beyond-the-Walls and St. John Lateran at Rome. Brunelleschi not only introduced columnar arcades into a number of cloisters and palace courts, but also used them effectively as exterior features in the **Loggia S. Paolo** and the Foundling Hospital (**Ospedale degli Innocenti**) at Florence. The chief drawback in these light arcades was their inability to withstand the thrust of the vaulting over the space behind them, and the consequent recourse to iron tie-rods where vaulting was used. The Italians, however, seemed to care little about this disfigurement.

MINOR WORKS. The details of the new style were developed quite as rapidly in purely decorative works as in monumental buildings. Altars, mural monuments, tabernacles, pulpits and *ciboria* afforded scope for the genius of the most distinguished artists. Among those who were specially celebrated in works of this kind should be named *Lucca della Robbia* (1400–82) and his successors, *Mino da Fiesole* (1431–84) and *Benedetto da Majano* (1442–97). Possessed of a wonderful fertility of invention, they and their pupils multiplied their works in extraordinary number and variety, not only throughout North Italy, but also in Rome and Naples. Among the most famous examples of this branch of design may be mentioned a pulpit in Sta. Croce by B. de Majano; a terra-cotta fountain in the sacristy of S. M. Novella, by the della Robbias; the Marsupini tomb in Sta. Croce, by *Desiderio da Settignano* (all in Florence); the della Rovere tomb in S. M. del Popolo, Rome, by Mino da Fiesole, and in the Cathedral at Lucca, the Noceto tomb and the Tempietto, by *Matteo Civitali*. It was in works of this character that the Renaissance oftenest made its first

appearance in a new centre, as was the case in Sienna, Pisa, Lucca, Naples, etc.

NORTH ITALY. Between 1450 and 1490 the Renaissance presented in Sienna,in a number of important palaces, a sharp contrast to the prevalent Gothic style of that city. The **P. del Governo** (formerly Piccolomini), in the style of the Riccardi at Florence, was built 1469, and the **Spannocchi Palace** in 1470. In 1463 *Ant. Federighi* built there the **Loggia del Papa.** About the same time *Bernardo di Lorenzo* was building for Pope Pius II (Æneas Sylvius Piccolomini) an entirely new city, **Pienza,** with a cathedral, archbishop's palace, town hall and Papal residence (the **P. Piccolomini,** an obvious copy of the P. Rucellai in Florence), which are interesting if not strikingly original works. Pisa possesses few early Renaissance structures, owing to the utter prostration of her fortunes in the fifteenth century, and the dominance of Pisan Gothic traditions. In Lucca, besides a wealth of minor monuments (largely the work of Matteo Civitali, 1435–

FIG. 169.—TOMB OF COUNT UGO, FIESOLE.

1501) in various churches, a number of palaces date from this period, the most important being the **P. Pretorio** and P. Bernardini. To Milan the Renaissance was carried by the Florentine masters *Michelozzi* and *Filarete*, to whom are respectively due the **Portinari Chapel** in S. Eustorgio (1462) and the earlier part of the great **Ospedale Maggiore** (1457). In the latter, an edifice of brick with terra-cotta enrichments, the windows were Gothic in outline—an unusual mixture of styles, even in Italy. The munificence of the Sforzas, the hereditary tyrants of the province, embellished the semi-Gothic **Certosa** of Pavia (see p. 290) with a new marble façade, begun 1476, which in its fanciful and exuberant decoration, and the small scale of its parts, belongs properly to the early Renaissance. Exquisitely beautiful in detail, it resembles rather a magnified altar-piece than a work of architecture, properly speaking. Bologna and Ferrara developed somewhat late in the century a strong local school of architecture, remarkable especially for the beauty of its courtyards, its graceful street arcades, and its artistic treatment of brick and terra-cotta (**P. Bevilacqua, P. Fava,** at Bologna; **P. Scrofa, P. Roverella,** at Ferrara). About the same time palaces with interior arcades and details in the new style were erected in Verona, Vicenza, Mantua, and other cities.

VENICE. In this city of merchant princes and a wealthy *bourgeoisie*, the architecture of the Renaissance took on a new aspect of splendor and display. It was late in appearing, the Gothic style with its tinge of Byzantine decorative traditions having here developed into a style well suited to the needs of a rich and relatively tranquil community. These traditions the architects of the new style appropriated in a measure, as in the marble incrustations of the exquisite little church of **S. M. dei Miracoli** (1480–89), and the façade of the **Scuola di S. Marco** (1485–1533), both by *Pietro Lombardo*. Nowhere else, unless on the contemporary façade of the Certosa at Pavia, were marble inlays and delicate carving, combined with

a framework of thin pilasters, finely profiled entablatures and arched pediments, so lavishly bestowed upon the street fronts of churches and palaces. The family of the *Lombardi* (Martino, his sons Moro and Pietro, and grandsons Antonio and Tullio), with *Ant. Rizzo* (also called *Riccio* and *Bregno*) and *Bart.*

FIG. 170.—VENDRAMINI PALACE, VENICE.

Buon, were the leaders in the architectural Renaissance of this period, and to them Venice owes her choicest masterpieces in the new style. Its first appearance is noted in the later portions of the church of **S. Zaccaria** (1456–1515), partly Gothic internally, with a façade whose semicircular pediment and small decorative arcades show a somewhat timid but interesting application of classic details. In this church, and still more so in S. Giobbe (1451–93) and the Miracoli above mentioned, the decorative element predominates throughout. It is hard to imagine details more graceful in design, more effective in the swing of their movement, or more delicate in execution

than the mouldings, reliefs, wreaths, scrolls, and capitals one encounters in these buildings. Yet in structural interest, in scale and breadth of planning, these early Renaissance Venetian buildings hold a relatively inferior rank.

PALACES. The great **Court** of the **Doge's Palace,** begun 1483 by *Ant. Rizzo,* belongs only in part to the first period. It shows, however, the lack of constructive principle and of largeness of composition just mentioned, but its decorative effect and picturesque variety elicit almost universal admiration. Like the neighboring façade of St. Mark's, it violates nearly every principle of correct composition, and yet in a measure atones for this capital defect by its charm of detail. Far more satisfactory from the purely architectural point of view is the façade of the **P. Vendramini** (Vendramin-Calergi), by Pietro Lombardo (1481). The simple, stately lines of its composition, the dignity of its broad arched and mullioned windows, separated by engaged columns—the earliest example in Venice of this feature, and one of the earliest in Italy—its well-proportioned basement and upper stories, crowned by an adequate but somewhat heavy entablature, make this one of the finest palaces in Italy (Fig. 170). It established a type of large windowed, vigorously modeled façades which later architects developed, but hardly surpassed. In the smaller contemporary P. Dario, another type appears, better suited for small buildings, depending for effect mainly upon well-ordered openings and incrusted paneling of colored marble.

ROME. Internal disorders and the long exile of the popes had by the end of the fourteenth century reduced Rome to utter insignificance. Not until the second half of the fifteenth century did returning prosperity and wealth afford the Renaissance its opportunity in the Eternal City. Pope Nicholas V had, indeed, begun the rebuilding of St. Peter's from designs by B. Rossellini, in 1450, but the project lapsed shortly after with the death of the pope. The earliest Renaissance building

in Rome was the **P. di Venezia,** begun in 1455, together with the adjoining porch of S. Marco. In this palace we find the influence of the old Roman monuments clearly manifested in the court arcade, built like those of the Colosseum, with superposed stages of massive piers and engaged columns carrying entablatures. The proportions are awkward, the details coarse; but the spirit of Roman classicism is here seen in the germ. The exterior of this palace is, however, still mediæval in spirit. The architects are unknown; *Giuliano da Majano* (1432–90), *Giacomo di Pietrasanta,* and *Meo del Caprino* (1430–1501) are known to have worked upon it, but it is not certain in what capacity.

The new style, reaching, and in time overcoming, the conservatism of the Church, overthrew the old basilican traditions. In **S. Agostino** (1479–83), by *Pietrasanta,* and **S. M. del Popolo,** by *Pintelli* (?), piers with pilasters or half-columns and massive arches separate the aisles, and the crossing is crowned with a dome. To the same period belong the Sistine chapel and parts of the Vatican palace, but the interest of these lies rather in their later decorations than in their somewhat scanty architectural merit. The architectural renewal of Rome, thus begun, reached its culmination in the following period.

OTHER MONUMENTS. The complete enumeration of even the most important Early Renaissance monuments of Italy is impossible within our limits. Two or three only can here be singled out as suggesting types. Among town halls of this period the first place belongs to the **P. del Consiglio** at Verona, by *Fra Giocondo* (1435–1515). In this beautiful edifice the façade consists of a light and graceful arcade supporting a wall pierced with four windows, and covered with elaborate frescoed arabesques (remodeled in 1873). Its unfortunate division by pilasters into four bays, with a pier in the centre, is a blemish avoided in the contemporary **P. del Consiglio** at Padua. The **Ducal Palace** at Urbino, by *Luciano da Laurana* (1468), is

noteworthy for its fine arcaded court, and was highly famed in its day. At Brescia **S. M. dei Miracoli** is a remarkable example of a cruciform domical church dating from the close of this period, and is especially celebrated for the exuberant decoration of its porch and its elaborate detail. Few campaniles were built in this period; the best of them are at Venice. Naples possesses several interesting Early Renaissance monuments, chief among which are the **Porta Capuana** (1484), by *Giul. da Majano*, the triumphal **Arch of Alphonso** of Arragon, by *Pietro di Martino*, and the **Cuomo** and **Gravina** palaces, the latter by *Gab. d'Agnolo*. Naples is also rich in minor works of the Early Renaissance, in which it ranks with Florence, Venice, and Rome.

CHAPTER XXI

RENAISSANCE ARCHITECTURE IN ITALY—*Continued*

THE ADVANCED RENAISSANCE AND DECLINE

BOOKS RECOMMENDED: As before, Anderson, Burckhardt, Cicognara, Fergusson, Palustre. Also, Gauthier, *Les plus beaux édifices de Gênes.* Geymüller, *Les projets primitifs pour la basilique de St. Pierre de Rome.* Gurlitt, *Geschichte des Barockstiles in Italien.* Laspeyres, *Die Kirchen der Renaissance in Mittel Italien.* Letarouilly, *Édifices de Rome moderne; Le Vatican.* Palladio, *The Works of A. Palladio.* Strack, *Die Central- und Kuppelkirchen der Renaissance in Italien.* Also, for St. Peter's and domed churches, consult Gosset, *Les coupoles d'orient et d'occident,* and Isabelle, *Les édifices circulaires et les domes.*

CHARACTER OF THE ADVANCED RENAISSANCE. It was inevitable that the study and imitation of Roman architecture should lead to an increasingly literal rendering of classic details and a closer copying of antique compositions. Toward the close of the fifteenth century the symptoms began to multiply of the approaching reign of formal classicism. Correctness in the reproduction of old Roman forms came to be highly esteemed, and in the following period the orders became the principal resource of the architect. During the so-called Cinquecento, that is, from the close of the fifteenth century to nearly or quite 1550, architecture still retained much of the freedom and refinement of the Quattrocento. There was meanwhile a notable advance in dignity and amplitude of design,

especially in the internal distribution of buildings. Externally the orders were freely used as subordinate features in the decoration of doors and windows, and in court arcades of the Roman type. The lantern-crowned dome upon a high drum was developed into one of the noblest of architectural forms. Great attention was bestowed upon all subordinate features; doors and windows were treated with frames and pediments of extreme elegance and refinement; all the cornices and mouldings were proportioned and profiled with the utmost care, and a new feature, the balustrade, for which there was no antique precedent, was elaborated into a feature at once useful and highly ornate. Interior decoration was even more splendid than before; relief enrichments in stucco, often of great delicacy, were used with admirable effect, and the greatest artists exercised their talents in the painting of vaults and ceilings, as in P. del Té at Mantua, by *Giulio Romano* (1492–1546), and the Sistine Chapel at Rome, by Michael Angelo. This period is distinguished by an exceptional number of great architects and buildings. It was ushered in by *Bramante Lazzari*, of Urbino (1444–1514), and closed during the career of *Michael Angelo Buonarotti* (1475–1564); two names worthy to rank with that of Brunelleschi. Inferior only to these in architectural genius were *Raphael* (1483–1520), *Baldassare Peruzzi* (1481–1536), *Antonio da San Gallo the Younger* (1485–1546), and *G. Barozzi da Vignola* (1507–1572), in Rome; *Giacopo Tatti Sansovino* (1479–1570), in Venice, and others almost equally illustrious. This period witnessed the erection of an extraordinary series of palaces, villas, and churches, the beginning and much of the construction of St. Peter's at Rome, and a complete transformation in the aspect of that city.

BRAMANTE'S WORKS. While precise time limits cannot be set to architectural styles, it is not irrational to date this period from the maturing of Bramante's genius. While his earlier works in Milan belong to the Quattrocento (S. M. delle

Grazie, the sacristy of San Satiro, the extension of the Great Hospital), his later designs show the classic tendency very clearly. The charming **Tempietto** in the court of S. Pietro in Montorio at Rome, a circular temple-like chapel (1502), is composed of purely classic elements, although it cannot be said to be a copy of any known Roman edifice. In the **P. Giraud** (Fig. 171) and the great **Cancelleria** Palace, pilasters appear in the external composition, and all the details of doors and windows betray the results of classic study, as well as the refined taste of their designer.* The beautiful courtyard of

* It is now denied by many investigators that either the Cancelleria or the Giraud palace is the work of Bramante, or any one of two or three smaller houses in Rome showing a somewhat similar architectural treatment. The date 1495 carved on a frieze of the Cancelleria palace is thought to forbid its attribution to Bramante, who is not known to have come to Rome till 1500; and there is a lack of positive evidence of his authorship of the Giraud palace and of the other houses which seem to be by the same hand. The resemblance in style between this group of buildings and his acknowledged work is considered by some insufficient to identify them as Bramante's.

It must be remarked, on the other hand, that this notable group of works, stamped with the marks and even the mannerisms of a strong personality, reveal an ability amounting to genius, and by no means unworthy of Bramante. It is almost inconceivable that they should have been designed by a mere beginner previously unknown and forgotten soon after. Those who deny the attribution to Bramante have thus far been unable to find another name worthy of the credit of these works, no two of them having agreed on any one person. None of the names suggested seems to fit the conditions even as well as Bramante's; while to some critics the comparison of these works with Bramante's Milanese work on the one hand and his great Court of the Belvedere in the Vatican on the other, yields conclusions quite opposed to those of the advocates of another authorship than Bramante's.

The controversy must be considered as still open, and it will probably so remain until settled by the discovery of new and indisputable evidence.

the Cancelleria combines the Florentine system of arches on columns with the Roman system of superposed arcades independent of the court wall. In 1506 Bramante began the rebuilding of St. Peter's for Julius II (see p. 307) and the construction of a new and imposing papal palace adjoining it on the Vatican hill. Of this colossal group of edifices, commonly known as the **Vatican,** he executed the greater Belvedere court (afterward divided in two by the Library and the Braccio Nuovo), the lesser octagonal court of the Belvedere, and the court of San Damaso, with its arcades afterward frescoed by Raphael and his school. Besides these, the cloister of S. M. della Pace, and many other works in and out of Rome, reveal the impress of Bramante's genius, alike in their admirable plans and in the harmony and beauty of their details.

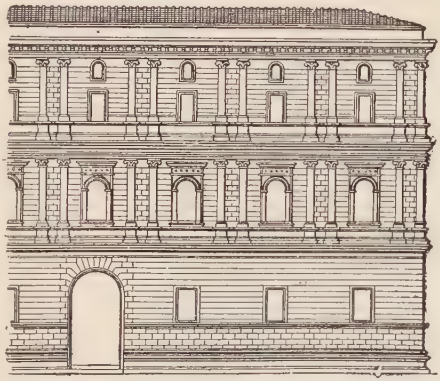

FIG. 171.—FAÇADE OF THE GIRAUD PALACE, ROME.

FLORENTINE PALACES. The P. Riccardi long remained the accepted type of palace in Florence. As we have seen, it was imitated in the Strozzi palace, as late as 1489, with greater perfection of detail, but with no radical change of conception. In the **P. Gondi,** however, begun in the following year by *Giuliano da San Gallo* (1445–1516), a more pronounced classic spirit appears, especially in the court and the interior design. Early in the sixteenth century classic columns and pediments began to be used as decorations for doors and windows; the rustication was confined to basements and corner-

quoins, and niches, loggias, and porches gave variety of light and shade to the façades (**P. Bartolini,** by *Baccio d'Agnolo;* **P. Larderel,** 1558, by *Dosio;* **P. Guadagni,** by *Cronaca;* **P. Pandolfini,** 1518, attributed to Raphael). In the **P. Serristori,** by Baccio d'Agnolo (1510), pilasters were applied to the composition of the façade, but this example was not often followed in Florence.

ROMAN PALACES. These followed a different type. They were usually of great size, and built around ample courts with arcades of classic model in two or three stories. The broad street façade in three stories with an attic or mezzanine was crowned with a rich cornice. The orders were sparingly used externally and effect was sought principally in the careful proportioning of the stories, in the form and distribution of the square-headed and arched openings, and in the design of mouldings, string-courses, cornices, and other details. The *piano nobile,* or first story above the basement, was given up to suites of sumptuous reception-rooms and halls, with magnificent ceilings and frescoes by the great painters of the day, while antique statues and reliefs adorned the courts, vestibules, and niches of these princely dwellings. The **Massimi** palace, by Peruzzi, is an interesting example of this type. The Vatican, Cancelleria, and Giraud palaces have already been mentioned; other notable palaces are the Palma (1506) and Sacchetti (1540) by A. da San Gallo the Younger; the **Farnesina,** by Peruzzi, with

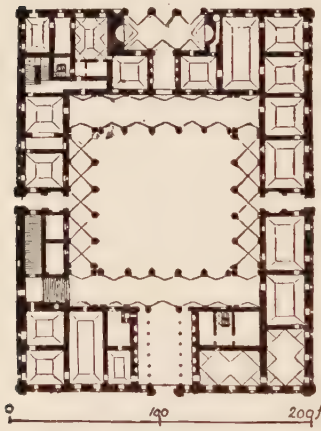

FIG. 172.—PLAN OF FARNESE PALACE.

celebrated fresco decorations designed by Raphael; and the Lante (1520) and Altemps (1530), by Peruzzi. But the noblest creation of this period was the

FARNESE PALACE, by many esteemed the finest in Italy. It was begun in 1530 for Alex. Farnese (Paul III) by A. da San Gallo the Younger, with Vignola's collaboration. The simple but admirable plan is shown in Fig. 172, and the courtyard, the most imposing in Italy, in Fig. 173. The exterior is monotonous, but the noble cornice by Michael Angelo measurably redeems this defect. The fine vaulted entrance vestibule, the court and the *salons*, make up an *ensemble* worthy of the great architects who designed it. The loggia toward the river was added by *Giacomo della Porta* in 1580.

FIG. 173.—ANGLE OF COURT OF FARNESE PALACE, ROME.*

VILLAS. The Italian villa of this pleasure-loving period afforded full scope for the most playful fancies of the architect, decorator, and landscape gardener. It comprised usually a dwelling, a *casino* or amusement-house, and many minor edifices, summer-houses, arcades, etc., disposed in extensive grounds laid out with terraces, cascades, and shaded alleys. The style was graceful, sometimes trivial, but almost always pleasing, making free use of stucco enrichments, both internally and externally, with abundance of gilding and frescoing. The **Villa Madama** (1516), by Raphael, with stucco-decorations by Giulio Romano, though incomplete and now dilapidated, is a

*The arches of the second tier were originally open.

noted example of the style. More complete, the **Villa of Pope Julius,** by Vignola (1550), belongs by its purity of style to this period; its façade and courts well exemplify the simplicity, dignity, and fine proportions of this master's work. In addition to these Roman villas may be mentioned the **V. Medici** (1540, by *Annibale Lippi,* now the French Academy of Rome); the **Casino del Papa** (or Villa Pia) in the Vatican Gardens, by *Pirro Ligorio* (1560); the **V. Lante,** near Viterbo, and the **V. d'Este,** at Tivoli, as displaying among almost countless others the Italian skill in combining architecture and gardening.

CHURCHES AND CHAPELS. This period witnessed the building of a few churches of the first rank, but it was especially prolific in memorial, votive, and sepulchral chapels added to churches already existing, like the **Chigi Chapel** of S. M. del Popolo, by Raphael. The earlier churches of this period generally followed antecedent types, with the dome as the central feature dominating a cruciform plan, and simple, unostentatious and sometimes uninteresting exteriors. Among them may be mentioned: at Pistoia, S. M. del Letto and **S. M. dell' Umiltà,** the latter a fine domical rotunda by *Ventura Vitoni* (1509), with an imposing vestibule; at Venice, **S. Salvatore,** by *Tullio Lombardo* (1530), an admirable edifice with alternating domical and barrel-vaulted bays; **S. Giorgio dei Grechi** (1536), by *Sansovino,* and S. M. Formosa; at Todi, the **Madonna della Consolazione** (1508-1606), by *Cola da Caprarola,* a charming design with a high dome and four apses;* at Montefiascone, the **Madonna delle Grazie,** by *Sammichele* (1523), besides several churches at Bologna, Ferrara, Prato, Sienna, and Rome of almost or quite equal interest. In these churches one may trace the development of the dome as an external feature, while in **S. Biagio,** at Montepulciano, the

* Often attributed to Bramante, who may possibly have had a hand in its design.

effort was made by *Ant. da San Gallo the Elder* (1455–1534) to combine with it the contrasting lines of two campaniles, of which, however, but one was completed.

ST. PETER'S. The culmination of Renaissance church architecture was reached in **St. Peter's,** at Rome. The original project of Nicholas V having lapsed with his death, it was the intention of Julius II to erect on the same site a stupendous domical church over the monument he had ordered of Michael Angelo. The design of Bramante, who began its erection in 1506, comprised a Greek cross with apsidal arms, the four angles occupied by domical chapels and loggias within a square outline (Fig. 174). The too hasty execution of this noble design led to the collapse of two of the arches under the dome, and to long delays after Bramante's death in 1514. Raphael, Giuliano da San Gallo, Peruzzi, and A. da San Gallo the Younger successively supervised the works under the popes from Leo X to Paul III, and devised a vast number of plans for its completion. Most of these involved fundamental alterations of the original scheme, and were motived by the abandonment of the proposed monument of Julius II; a church, and not a mausoleum, being required. In 1546 Michael Angelo was assigned by Paul III to the works, and gave final form to the general design in a simplified version of Bramante's plan with more massive supports, a square east front* with a portico for the chief entrance, and the unrivalled **Dome** which is its most striking feature. This dome, slightly altered and improved in curvature by della Porta after M. Angelo's death in 1564, was completed by *D. Fontana* in 1604. It is the most majestic creation of the Renaissance, and one of the greatest architectural conceptions of all history. It measures 140 feet in internal diameter, and with its two shells rises from a lofty

* St. Peter's fronts to the East instead of the West, reversing the usual orientation of churches, but conforming to the practice of the earlier basilicas.

drum, buttressed by coupled Corinthian columns, to a height of 405 feet to the top of the lantern. The church, as left by Michael Angelo, was harmonious in its proportions, though the single order used internally and externally dwarfed by its colossal scale the vast dimensions of the edifice. Unfortunately in 1606 *C. Maderna* was employed by Paul V to lengthen the nave by two bays, destroying the proportions of the whole, and hiding the dome from view on a near approach. The present tasteless façade was Maderna's work. The splendid atrium or portico added (1629–67), by *Bernini*, as an approach, mitigates but does not cure the ugliness and pettiness of this front.

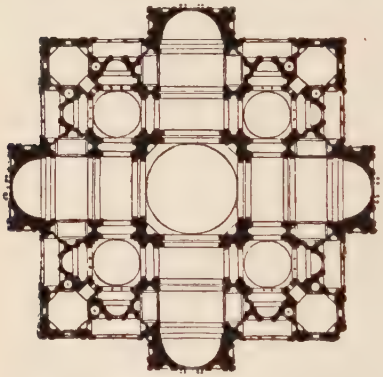

FIG. 174.—ORIGINAL PLAN OF ST. PETER'S, ROME.

St. Peter's as thus completed (Figs. 175, 176) is the largest church in existence, and in many respects is architecturally worthy of its preeminence. The central aisle, nearly 600 feet long, with its stupendous panelled and gilded vault, 83 feet in span, the vast central area and the majestic dome, belong to a conception unsurpassed in majestic simplicity and effectiveness. The construction is almost excessively massive, but admirably disposed. On the other hand the nave is too long, and the details not only lack originality and interest, but are also too large in scale, dwarfing the whole edifice. The interior (Fig. 176) is wanting in the sobriety of color that befits so stately a design; its decorative details, especially the stucco enrichments added in the seventeenth century, are to a large extent coarse and

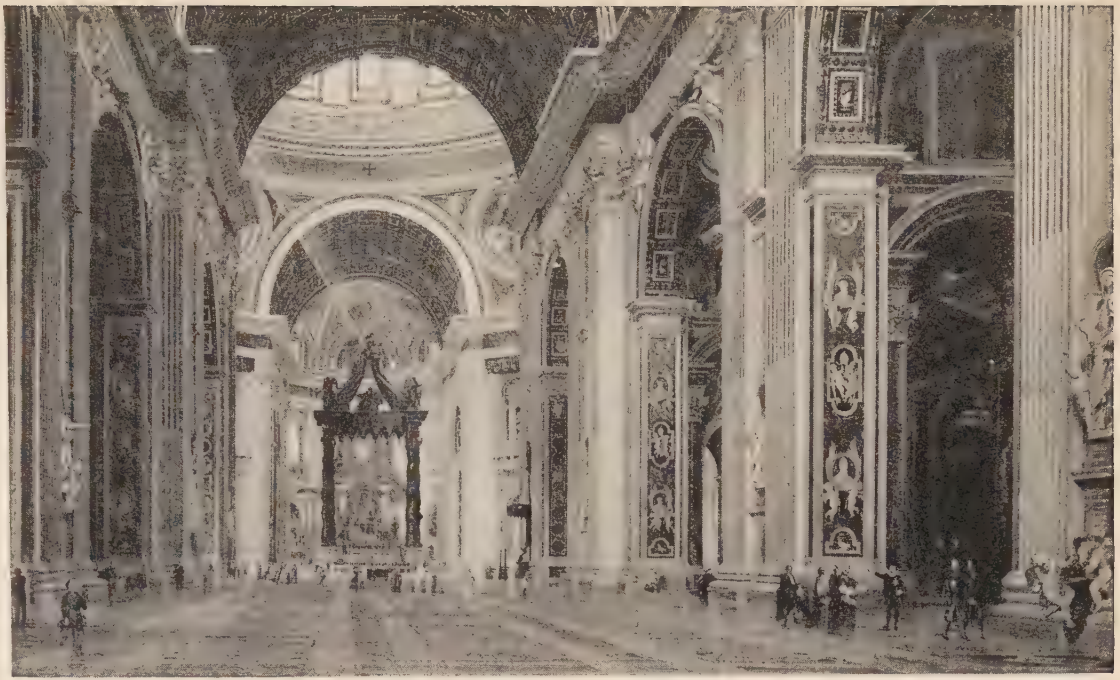

FIG. 176.—INTERIOR OF ST. PETER'S, ROME.

tasteless, tending to nullify the solemnity which the grand dimensions impart to the interior effect. But in spite of its defects it is a most impressive edifice and a wonderful monument of architecture.

THE PERIOD OF FORMAL CLASSICISM. By the middle of the sixteenth century the classic orders had come to dominate all architectural design. While Vignola, who wrote a treatise upon the orders, had employed them with unfailing refinement and judgment, his contemporaries and successors showed less discernment and taste, making of them an end rather than a means. Too often mere classical correctness was substituted for the fundamental qualities of original invention and intrinsic beauty of composition. The innovation of colossal orders extending through several stories, while it gave to exterior designs a certain grandeur of scale, tended to coarseness and heaviness of detail. Sculpture and ornament began to lose their refinement, and while street-architecture gained in monumental scale, and public squares received a more stately adornment than ever before, the street-façades individually were too often bare and uninteresting in their correct formality. In the

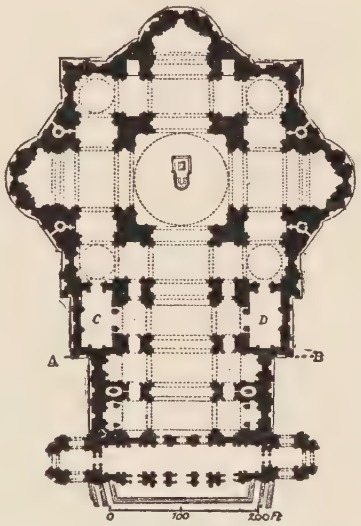

FIG. 175.—PLAN OF ST. PETER'S, ROME, AS NOW STANDING.

The portion below the line *A*, *B*, and the side chapels, *C*, *D*, were added by Maderna. The remainder represents Michael Angelo's plan.

interiors of churches and large halls there appears a struggle between a cold and dignified simplicity and a growing tendency toward pretentious sham. But these pernicious tendencies did not fully mature till the latter part of the century, and the half-century after 1540 or 1550 was prolific of notable works in both ecclesiastical and secular architecture. The names of Michael Angelo and Vignola, whose careers began in the preceding period; of Palladio (1518–1580) and della Porta (1541–1604) in Rome; of Ammanati in Florence and Lucca, of Sammichele and Sansovino in Verona and Venice, and of Galeazzo Alessi in Genoa, stand high in the ranks of architectural merit.

CHURCHES. The type established by St. Peter's was widely imitated throughout Italy. The churches in which a Greek or Latin cross is dominated by a high dome rising from a drum and terminating in a lantern, and is treated both internally and externally with Roman Corinthian pilasters and arches, are almost numberless. Among the best churches of this type is the **Gesù** at Rome, by Vignola (1568), with a highly ornate interior of excellent proportions and a less interesting exterior, the façade adorned with two stories of orders and great flanking volutes over the sides (see p. 280). Two churches at Venice, by *Palladio*—**S. Giorgio Maggiore** (1560; façade by *Scamozzi*, 1575) and the **Redentore**—offer a strong contrast to the Gesù, in their cold and almost bare but pure and correct designs. An imitation of Bramante's plan for St. Peter's appears in **S. M. di Carignano,** at Genoa, by *Galeazzo Alessi* (1500–72), begun 1552, a fine structure, though inferior in scale and detail to its original. Besides these and other important churches there were many large domical chapels of great splendor added to earlier churches; of these the **Chapel of Sixtus V** in S. M. Maggiore, at Rome, by *D. Fontana* (1543–1607), is an excellent example.

PALACES: ROME. The palaces on the Capitoline Hill, built at different dates (1540–1644) from designs by Michael Angelo,

illustrate the palace architecture of this period, and the imposing effect of a single colossal order running through two stories. This treatment, though well adapted to produce monumental effects in large squares, was dangerous in its bareness and heaviness of scale, and was better suited for buildings of vast dimensions than for ordinary street-façades. In other Roman palaces of this time the traditions of the preceding period still prevailed, as in the **Sapienza** (University), by della Porta (1575), which has a dignified court and a façade of great refinement without columns or pilasters. The **Papal palaces** built by Domenico Fontana on the Lateran, Quirinal, and Vatican hills, between 1574 and 1590, externally copying the style of the Farnese, show a similar return to earlier models, but are less pure and refined in detail than the Sapienza. The great pentagonal **Palace of Caprarola,** near Rome, by Vignola, is perhaps the most successful and imposing production of the Roman classic school in this field.

VERONA. Outside of Rome, palace-building took on various local and provincial phases of style, of which the most important were the closely related styles of Verona, Venice, and Vicenza. *Michele Sammichele* (1484–1554), who built in Verona the **Bevilacqua, Canossa, Pompei,** and **Verzi** palaces and the four chief city gates, and in Venice the **P. Grimani,** his masterpiece (1550), was a designer of great originality and power. He introduced into his military architecture, as in the gates of Verona, the use of rusticated orders, which he treated with skill and taste. The idea was copied by later architects and applied, with doubtful propriety, to palace-façades; though Ammanati's garden-façade for the Pitti palace, in Florence (*cir.* 1560), is an impressive and successful design.

VENICE. Into the development of the maturing classic style *Giacopo Tatti Sansovino* (1477–1570) introduced in his Venetian buildings new elements of splendor. Coupled columns between arches themselves supported on columns, and a profusion of

figure sculpture, gave to his palace-façades a hitherto unknown magnificence of effect, as in the **Library of St. Mark** (now the Royal Palace, Fig. 177), and the **Cornaro** palace (P. Corner de Cà Grande), both dating from about 1530–40. So strongly did he impress upon Venice these ornate and sumptuous variations on classic themes, that later architects adhered, in a very debased period, to the main features and spirit of his work.

FIG. 177.—LIBRARY OF ST. MARK, VENICE.

VICENZA. Of *Palladio's* churches in Venice we have already spoken; his palaces are mainly to be found in his native city, Vicenza. In these structures he displayed great fertility of invention and a profound familiarity with the classic orders, but the degenerate taste of the Baroque period already begins to show itself in his work. There is less of architectural propriety and grace in these pretentious palaces, with their colossal orders and their affectation of grandeur, than in the designs of Vignola or Sammichele. Wood and plaster, used to mimic stone, indicate the approaching reign of sham in all design (**P. Barbarano, 1570**; **Chieregati, 1560**; **Tiene, Valmarano, 1556**; **Porto, Prefetizzio, Villa Capra**).

His masterpiece is the two-storied arcade about the mediæval **Basilica,** in which the arches are supported on a minor order between engaged columns serving as buttresses. This treatment has ever since been known as the *Palladian Motive.*

GENOA. During the second half of the sixteenth century a remarkable series of palaces was erected in Genoa, especially notable for their great courts and imposing staircases. These last were given unusual prominence owing to differences of level in the courts, arising from the slope of their sites on the hillside. Among these palaces the **P. Giustiniani, Lercari, Cambiasi, Sauli, Pallavicini** and several others, and the elegant **Loggia dei Banchi,** were by *Galeazzo Alessi* (1502–72); others by architects of lesser note; but nearly all characterized by their effective planning, fine stairs and loggias, and strong and dignified, if sometimes uninteresting, detail (**P. Balbi, Brignole, Doria-Tursi** [or Municipio], by *Rocco Lurago,* **Durazzo,** [or Reale], and **University** by *Bianchi*).

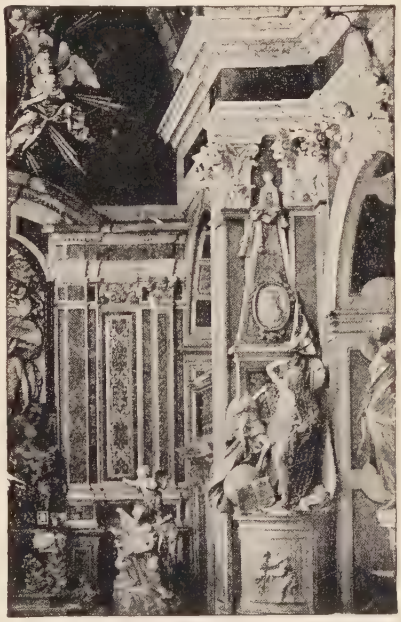

FIG. 178.—INTERIOR OF SAN SEVERO, NAPLES.

THE BAROQUE STYLE. A reaction from the cold *classicismo* of the late sixteenth century showed itself in the follow-

ing period, in the lawless and often tasteless extravagances of the so-called *Baroque* style. The wealthy Jesuit order was a notorious contributor to the debasement of architectural taste. Most of the Jesuit churches and many others not belonging to the order, but following its pernicious example, are monuments of bad taste and pretentious sham. Broken and contorted pediments, huge scrolls, heavy mouldings, ill-applied sculpture in exaggerated attitudes, and a general disregard of architectural propriety characterized this period, especially in its church architecture, to whose style the name *Jesuit* is often applied. Sham marble and heavy and excessive gilding were universal (Fig. 178.) *C. Maderna* (1556–1629), *Lorenzo Bernini* (1589–1680), and *F. Borromini* (1599–1667) were the worst offenders of the period, though Bernini was an artist of undoubted ability, as proved by his colonnades or atrium in front of St. Peter's. There were, however, architects of purer taste whose works even in that debased age were worthy of admiration.

BAROQUE CHURCHES. The Baroque style prevailed in church architecture for almost two centuries. The majority of the churches present varieties of the cruciform plan crowned by a high dome which is usually the best part of the design. The vices of the period appear in all other parts of these churches, especially in their façades and internal decoration. **S. M. della Vittoria,** by Maderna, and **Sta. Agnese,** by Borromini, both at Rome, are examples of the style. Naples is particularly full of Baroque churches (Fig. 178), a few of which, like the **Gesù Nuovo** (1584), are dignified and creditable designs. The domical church of **S. M. della Salute,** at Venice (1631), by *Longhena* (1604–1675), is also a majestic edifice in excellent style (Fig. 179), and here and there other churches offer exceptions to the prevalent baseness of architecture. Particularly objectionable was the wholesale disfigurement of existing monuments by ruthless remodeling, as in S. John Lateran,

at Rome, the cathedrals of Ferrara, Palermo, Ravenna, and many others.

PALACES. These were generally superior to the churches, and not infrequently impressive and dignified structures. The two best examples in Rome are the **P. Borghese,** by *Martino Lunghi the Elder* (1590), with a fine court arcade on coupled Doric and Ionic columns, and the **P. Barberini,** by Maderna and Borromini, with an elliptical staircase by Bernini, one of the few palaces in Italy with projecting lateral wings. In Venice, *Longhena,* in the **Rezzonico** and **Pesaro** palaces (1650 – 80), showed his freedom from the mannerisms of the age by reproducing successfully the ornate but dignified style of Sansovino (see p. 313). At Naples *D. Fontana,* whose works overlap the Baroque period, produced in the **Royal Palace** (1600) and the **Royal Museum** (1586–1615) designs of considerable dignity, in some respects superior to his papal residences in Rome. In suburban villas, like the **Albani** and **Borghese** villas near Rome, the ostentatious style of the Decline found free and congenial expression.

FIG. 179.—CHURCH OF S. M. DELLA SALUTE, VENICE.

FOUNTAINS. To this period belong many of the monu-

mental fountains erected in Rome, Messina, Viterbo, Bologna, Florence and other cities. Among these, two in Rome are worthy of especial mention: the **Fonte Felice** by D. Fontana (1585) and the **F. Paolina** (1611), by *Giov. Fontana.* The great Fontana di Trevi is a later work.

LATER MONUMENTS. In the few eighteenth-century buildings which are worthy of mention there is noticeable a reaction from the extravagances of the seventeenth century, shown in the dignified correctness of the exteriors and the somewhat frigid splendor of the interiors. The most notable work of this period is the **Royal Palace** at **Caserta,** by *Van Vitelli* (1752), an architect of considerable taste and inventiveness, considering his time. This great palace, 800 feet square, encloses four fine courts, and is especially remarkable for the simple if monotonous dignity of the well-proportioned exterior and the effective planning of its three octagonal vestibules, its ornate chapel and noble staircase. Staircases, indeed, were among the most successful features of late Italian architecture, as in **Scala Regia** of the Vatican, and in the Corsini, Braschi, and Barberini palaces at Rome, the Royal Palace at Naples, etc.

In church architecture the **east front** of **S. John Lateran*** in Rome, by *Galilei* (1734), and the whole **exterior** of **S. M. Maggiore,** by *Ferd. Fuga* (1743), are noteworthy designs: the former an especially powerful conception, combining a colossal order with two smaller orders in superposed *loggie,* but marred by the excessive scale of the balustrade and statues which crown it. The **Fountain** of **Trevi,** conceived in much the same spirit (1735, by *Niccola Salvi*), is a striking piece of decorative architecture. The **Sacristy** of **St. Peter's,** by *Marchionne* (1775), also deserves mention as a monumental and not uninteresting work. In the early years of the nineteenth century

* St. John Lateran follows the primitive basilican orientation, as does St. Peter's, instead of the later mediæval custom of fronting westwards.

the **Braccio Nuovo** of the Vatican, by *Stern*, the imposing church of **S. Francesco di Paola** at Naples, by *Bianchi*, designed in partial imitation of the Pantheon, and the great **S. Carlo Theatre** at Naples, show the same coldly classical spirit, not wholly without merit, but lacking in true originality and freedom of conception.

CAMPANILES. The **campaniles** of the Renaissance and Decline deserve passing reference, though less important and interesting than other forms of Renaissance architecture. Some are simple square towers with pilasters; more often engaged columns and entablatures mark the several stories, and the upper portion is treated either with an octagonal lantern or with diminishing stages, and sometimes with a spire. Of the latter class the best example is that of S. Biagio, at Montepulciano,—one of the two designed to flank the façade of Ant. da S. Gallo's beautiful church of that name. One or two good late examples are to be found at Naples. Of the more massive square type there are examples in the towers of S. Michele, Venice; of the cathedral at Ferrara, Sta. Chiara at Naples, and Sta. Maria dell' Anima—one of the earliest—at Rome. The most complete and perfect of these square belfries of the Renaissance is that of the **Campidoglio** at Rome, by Martino Lunghi, dating from the end of the sixteenth century, which groups so admirably with the palaces of the Capitol. Venetia possesses a number of graceful and lofty bell-towers, generally of brick with marble bell-stages, of which the upper part of the **Campanile** of **St. Mark** (which fell in 1902; see p. 169) and the tower of **S. Giorgio Maggiore** are the finest examples.

IN CONCLUSION: The revival of the actual forms of ancient Roman architecture was only partially accomplished by the Italian architects of the Renaissance and then only for brief periods—during the latter half of the sixteenth century, and in a few buildings of the eighteenth. The architects of the

early Renaissance did not attain to their aim of reviving Roman art; those of the Decline soon wearied of its restrictions. Their revolt would perhaps been less lawless had their predecessors not fallen into so mechanical a copying of antique forms—of the letter without the spirit of antique art.

MONUMENTS. (Mainly in addition to those mentioned in the text). 15TH CENTURY—FLORENCE: Old Sacristy and Cloister S. Lorenzo; P. Quaratesi, 1440; cloisters at Sta. Croce and Certosa, all by Brunelleschi; façade S. M. Novella, by Alberti, 1456; Badia at Fiesole, from designs of Brunelleschi, 1462; Court of P. Vecchio, by Michelozzi, 1464 (altered and enriched, 1565); Hall of 500 in P. Vecchio, by Vasari, 1495.—VENICE: S. Michele, by Moro Lombardo, 1466; S. M. del Orto, 1473; S. Giovanni Crisostomo, by Moro Lombardo, atrium of S. Giovanni Evangelista, Procurazie Vecchie, all 1481; Scuola di S. Marco, by Martino and Pietro Lombardo, 1490; P. Dario; P. Corner-Spinelli.—FERRARA: P. Schifanoja, 1469; P. Scrofa or Costabili, 1485; S. M. in Vado, P. dei Diamanti, P. Bevilacqua, S. Francesco, S. Benedetto, S. Cristoforo, all 1490-1500.—MILAN: S. M. delle Grazie, E. end, Sacristy of S. Satiro, S. M. presso S. Celso, all by Bramante, 1477-1499.—ROME: S. Pietro in Montorio, 1472. SIENNA: Loggia del Papa and P. Nerucci, 1460; Sta. Catarina, 1490, by di Bastiano and Federighi, church later by Peruzzi; Library in cathedral by L. Marina, 1497; Oratory of S. Bernardino, by Turrapili, 1496.—PIENZA: Cathedral, Bishop's Palace (Vescovado), P. Pubblico, all cir. 1460, by B. di Lorenzo (or Rosselini?). ELSEWHERE (in chronological order): Oratory S. Bernardino, Perugia, by di Duccio, 1461; Church over Casa Santa, Loreto, 1465-1520; Capella Colleoni, Bergamo, 1476; S. M. in Organo, Verona, 1481; Madonna della Croce, Crema, by B. Battagli, 1490-1556; Madonna di Campagna and S. Sisto, Piacenza, both 1492-1511; P. Bevilacqua, Bologna, by Nardi, 1492 (?).

16TH CENTURY—ROME: P. Sora, 1501; S. M. della Pace and cloister, 1504; both by Bramante (façade of church by P. da Cortona, 17th century); S. M. di Loreto, 1507, by A. da San Gallo the Elder; P. Vidoni, by Raphael; P. Lante, 1520; Vigna Papa Giulio 1534, by Peruzzi, P. dei Conservatori, 1540, and P. del Senatore, 1563 (both on Capitol), by M. Angelo, Vignola, and della Porta; S. Andrea della Valle, 1591, by Olivieri (façade, 1670, by Rainaldi).—FLORENCE: Medici Chapel of S. Lorenzo, new sacristy of same, and

Laurentian Library, all by M. Angelo, 1529-40; Mercato Nuovo, 1547, by B. Tasso; P. degli Uffizi, 1560-70, by Vasari; P. Giugni, 1560-8.—VENICE: P. Camerlinghi 1525, by Bergamasco; S. Francesco della Vigna, by Sansovino, 1539, façade by Palladio, 1568; Zecca or Mint, 1536, and Loggetta of Campanile, 1540, by Sansovino; Procurazie Nuove, 1584, by Scamozzi.—VERONA: Capella Pellegrini in S. Bernardino, 1514; City Gates, by Sammichele, 1530-40 (Porte Nuova, Stuppa, S. Zeno, S. Giorgio).—VICENZA: P. Porto, 1552; Teatro Olimpico, 1580; both by Palladio.—GENOA: P. Andrea Doria, by Montorsoli, 1529; P. Ducale, by Pennone, 1550; P. Lercari, P. Spinola, P. Sauli, P. Marcello Durazzo, all by Gal. Alessi, cir. 1550; Sta. Annunziata, 1587, by della Porta.—ELSEWHERE: (in chronological order): P. Roverella, Ferrara, 1508; P. del Magnifico, Sienna, 1508; by Cozzarelli; P. Communale, Brescia, 1508, by Formentone; P. Albergati, Bologna, 1510; P. Ducale, Reggio-Gonzaga or Corte Reale, and Pal. della Giustizia, all in Mantua, 1520-40; P. Giustiniani, Padua, by Falconetto, 1524; Ospedale del Ceppo, Pistoia, 1525; Madonna delle Grazie, Pistoia, by Vitoni, 1535; P. Buoncampagni-Ludovisi, Bologna, 1545; Cathedral, Padua, 1550, by Ringhetti and della Valle, after M. Angelo; P. Bernardini, 1560, and P. Ducale, 1578, at Lucca, both by Ammanati.

17TH CENTURY: Chapel of the Princes in S. Lorenzo, Florence, 1604, by Nigetti; S. Pietro, Bologna, 1605; S. Andrea delle Fratte, Rome, 1612; Villa Borghese, Rome, 1616, by Vasanzio; P. Contarini delle Scrigni, Venice, by Scamozzi; Badia at Florence, rebuilt 1625 by Segaloni; S. Ignazio, Rome, 1626-85; Museum of the Capitol, Rome, 1644-50; Church of Gli Scalzi, Venice, 1649; P. Pesaro, Venice, by Longhena, 1650; P. Reale, Turin, 1660; S. Moisè, Venice, 1668; Brera Palace, Milan; P. Carignano, Turin, 1680; S. M. Zobenigo, Venice, 1680; Dogana di Mare, Venice, 1686, by Benone; Santi Apostoli, Rome.

18TH AND EARLY 19TH CENTURY: University, Turin, by Ricca, 1713; Gesuati, at Venice, 1715-30; P. Reale, Milan, 1772; S. Geremia, Venice, 1753, by Corbellini; P. Braschi, Rome, by Morelli, 1790; Nuova Fabbrica, Venice, 1810.

CHAPTER XXII

RENAISSANCE ARCHITECTURE IN FRANCE

BOOKS RECOMMENDED: As before, Fergusson, Müntz, Palustre. Also Berty, *La Renaissance monumentale en France.* Blomfield, *A History of French Architecture, 1494-1661.* Blondel, *Architecture française.* Daly, *Motifs historiques d'architecture et de sculpture.* Du Cerceau, *Les plus excellents bastiments de France.* Von Geymüller, *Die Baukunst der Renaissance in Frankreich* (in *Hdbuch. d. Arch.*). Lübke, *Geschichte der Renaissance in Frankreich.* Mathews, *The Renaissance under the Valois Kings.* Palustre, *La Renaissance en France.* Rouyer et Darcel, *L'Art architectural en France.* Sauvageot, *Choix de palais, châteaux, hôtels, et maisons de France.* Ward, *The Architecture of the Renaissance in France, 1495-1830.*

ORIGIN AND CHARACTER. The vitality and richness of the Gothic style in France, even in its decline in the fifteenth century, long stood in the way of any general introduction of classic forms. When the Renaissance appeared, it came as a foreign importation, introduced from Italy by the king and the nobility. It underwent a protracted transitional phase, during which the national Gothic forms and traditions were picturesquely mingled with those of the Renaissance. The campaigns of Charles VIII (1489), Louis XII (1499), and Francis I (1515), in vindication of their claims to the throne of Naples and the dukedom of Milan, brought these monarchs and their nobles into contact with the splendid material and artistic civilization of Italy, then in the full tide of the maturing Renaissance. They returned to France, filled with the ambition to rival the splendid palaces and gardens of Italy, taking with them Italian artists

to teach their arts to the French. But while these Italians successfully introduced many classic elements and details into French architecture, they wholly failed to dominate the French master-masons and *tailleurs de pierre* in matters of planning and general composition. The early Renaissance architecture of France is consequently wholly unlike the Italian, from which it derived only minor details and a certain largeness and breadth of spirit. It differs from the Italian also in being pre-eminently a royal and courtly style, dominated through much of its history by the taste and the architectural activity of a series of builder-monarchs.

PERIODS. The French Renaissance and its sequent developments may be broadly divided into three periods, with subdivisions coinciding more or less closely with various reigns, as follows:

I. The Valois Period, or Renaissance proper, 1483–1589, subdivided into:

a. The Transition, comprising the reigns of Charles VIII and Louis XII (1483–1515), and the early years of that of Francis I; characterized by a picturesque mixture of classic details with Gothic conceptions.

b. The Style of Francis I, or Early Renaissance, from about 1520 to that king's death in 1547; distinguished by a remarkable variety and grace of composition and beauty of detail, with a gradual increase of classic forms.

c. The Advanced Renaissance, comprising the reigns of Henry II (1547), Francis II (1559), Charles IX (1560), and Henry III (1574–89); marked by a constant struggle between the increasing classical tendency and a more or less fantastic caprice.

II. The Bourbon or Classic Period (1589–1715):

a. Style of Henry IV, covering his reign and partly that of Louis XIII (1610–43), employing the orders and other classic forms with a somewhat heavy, florid style of ornament.

b. Style of Louis XIV, beginning in the preceding reign and extending through that of Louis XIV (1643–1715); the great age of classic architecture in France, corresponding to the Palladian in Italy.

III. The Decline or Rococo Period, corresponding with the reign of Louis XV (1715–74); marked by a fanciful and somewhat frivolous capriciousness of decoration.

During this period a reaction set in toward a severer classicism, leading to the styles of Louis XVI and of the Empire, to be treated of in a later chapter. Through all these developments there appears a constant struggle between two tendencies: one, which may be called the Latin, toward classical correctness; the other, which we may for lack of a better designation call the Gallic, toward freedom from the traditional restraints. The progress from the free style of Francis I to the formal correctness of that of Louis XIV was marked by singular oscillations, and the struggle continues even in modern French art.

THE TRANSITION. As early as 1475 the new style made its appearance in altars, tombs, and rood-screens wrought by French carvers with the collaboration of Italian artificers. The tomb erected by Charles of Anjou to his father in Le Mans Cathedral (1475, by *Francesco Laurana*), the chapel of St. Lazare in the cathedral of Marseilles (1483), and the tomb * of the children of Charles VIII in Tours Cathedral (1506), by *Michel Colombe*, the greatest artist of his time in France, are examples. The schools of Rouen and Tours were especially prominent in works of this kind, marked by exuberant fancy and great delicacy of execution. In church architecture Gothic traditions were long dominant, in spite of the great numbers of Italian prelates in France. It was in *châteaux*, palaces, and dwellings that the new style triumphed most notably.

EARLY CHÂTEAUX. The castle of Charles VIII, at Amboise on the Loire, shows little trace of Italian influence. It

* Also attributed to Giralamo da Fiegole and to the Italian Jean Juste. The question is still open.

was under Louis XII that the transformation of French architecture really began. The **Château de Gaillon** (of which unfortunately only fragments remain in the École des Beaux-Arts at Paris), built for the Cardinal George of Amboise, between 1497 and 1509, by *Pierre Fain*, was the masterwork of the Rouen school. It presented a curious mixture of styles, with its irregular plan, its moat, drawbridge, and round corner-towers, its high roofs, turrets, and dormers, which gave it, in spite of many Renaissance details, a mediæval picturesqueness. The east and south wings of the **Château de Blois,** begun for Louis XII about 1500, were the first of a remarkable series of royal palaces which are the glory of French architecture. They show the new influences in horizontal lines and flat, unbroken façades of brick and stone, rather than in their architectural details (Fig. 180). The **Ducal Palace** at Nancy and the **Hôtel de Ville** at Orléans, by *Viart*, show a somewhat similar commingling of the classic and mediæval styles.

FIG. 180.—BLOIS, COURT FAÇADE OF WING OF LOUIS XII.

STYLE OF FRANCIS I. Under the lead of Italian artists, like il Rosso, Serlio, and Primaticcio, classic elements early

began to dominate the general composition and Gothic details to disappear. A simple and effective system of exterior design was adopted in the castles and palaces of this period. Finely moulded belt-courses at the sills and heads of the windows marked the different stories, and were crossed by a system of almost equally important vertical lines, formed by superposed pilasters flanking the windows continuously from basement to roof. The façade was crowned by a slight cornice and open balustrade, above which rose a steep and lofty roof, diversified by elaborate dormer windows which were adorned with gables and pinnacles (Fig. 183). Slender pilasters, treated like long panels ornamented with arabesques of great beauty, or with a species of baluster shaft* like a candelabrum, were preferred to columns, and were provided with graceful capitals of the Corinthianesque type. The mouldings were minute and richly carved; pediments were replaced by steep gables, and mullioned windows with stone crossbars were used in perference to the simpler Italian openings. In the earlier monuments Gothic details were still used occasionally; and round corner-towers, high dormers, and numerous turrets and pinnacles appear even in the châteaux of later date.

CHURCHES. Ecclesiastical architecture received but scant attention under Francis I, and, so far as it was practised, still clung tenaciously to Gothic principles. Among the few important churches of this period may be mentioned **St. Etienne du Mont,** at Paris (1517–38), in which classic and Gothic features appear in nearly equal proportions; the east end of **St. Pierre** at Caen, with rich external carving; and the great parish church of **St. Eustache** at Paris (1532, by *Pierre Lemercier*), in which the plan and construction are purely Gothic,

* Derived evidently from the decorations of the E. end of S. M. delle Grazie at Milan and the mullion-candelabra in the great windows of the Certosa at Pavia, as a result of Francis I's campaigns in Italy.

while the details throughout belong to the new style, though with little appreciation of the spirit and proportions of classic art. New façades were also built for a number of already existing churches, among which **St. Michel,** at Dijon, is conspicuous, with its vast portal arch and imposing towers. The Gothic towers of Tours Cathedral were completed with Renaissance lanterns or belfries, the northern in 1507, the southern in 1547.

FIG. 181.—STAIRCASE TOWER, BLOIS.

PALACES. To the palace at Blois begun by his predecessor, Francis I added a northern and a western wing, completing the court. The north wing is one of the masterpieces of the style, presenting toward the court a simple and effective composition, with a rich but slightly projecting cornice and a high roof with elaborate dormers. This façade is divided into two unequal sections by the open **Staircase Tower** (Fig. 181), a *chef d'oeuvre* in boldness of construction as well as in delicacy and richness of carving. The outer façade of this wing is a less ornate but more vigorous design, crowned by a continuous open loggia under the roof. More extensive than Blois was **Fontainebleau,** the favorite residence of the king and of many of his successors. Following in parts the irregular plan of the

convent it replaced, its other portions were more symmetrically disposed, while the whole was treated externally in a somewhat severe, semi-classic style, singularly lacking in ornament.

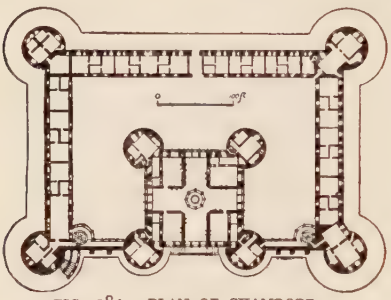

FIG. 182.—PLAN OF CHAMBORD.

Internally, however, this palace, begun in 1528, by *Gilles Le Breton* (1495?–1552), was at that time the most splendid in France, the gallery of Francis I being especially noted. The **Château of St. Germain,** near Paris (1539, by *Pierre Chambiges*, d. 1544), is of a very different character. Built largely of brick, with flat balustraded roof and deep buttresses carrying three ranges of arches, it is neither Gothic nor classic, neither fortress nor palace in aspect, but a wholly unique conception.

The rural châteaux and hunting-lodges erected by Francis I display the greatest diversity of plan and treatment, attesting

FIG. 183.—ROOF OF CHAMBORD.

the inventiveness of the French genius, expressing itself in a new-found language, whose formal canons it disdained. Chief among them is the **Château of Chambord** (Figs. 182, 183)—"a Fata Morgana in the midst of a wild, woody thicket," to use Lübke's language. This extraordinary edifice, resembling in plan a feudal castle with curtain-walls, bastions, moat, and donjon, is in its architectural treatment a palace with arcades, open stair-towers, a noble double spiral staircase terminating in a graceful lantern, and a roof of the most bewildering complexity of towers, chimneys and dormers (1526, by *Pierre le Nepveu*). The hunting-lodges of La Muette and Chalvau, and the so-called **Château de Madrid**—all three demolished during or since the Revolution—deserve mention, especially the last. This consisted of two rectangular pavilions, connected by a lofty banquet-hall, and adorned externally with arcades in Florentine style, and with medallions and reliefs of della-Robbia ware (1527, by *Gadyer*).

FIG. 184.—DETAIL OF COURT OF LOUVRE, PARIS.

THE LOUVRE. By far the most important of all the architectural enterprises of this reign, in ultimate results, if not in original extent, was the beginning of a new palace to replace the old Gothic fortified palace of the Louvre. To this task Pierre Lescot was summoned in 1542, and the work of erection actually begun in 1546. The new palace, in a sumptuous and remarkably dignified classic style, was to have covered precisely the area of the demolished fortress. Only the southwest half, comprising two sides of the court, was, however,

undertaken at the outset. (Fig. 184). It remained for later monarchs to amplify the original scheme, and ultimately to complete, late in the last century, the most extensive and beautiful of all the royal residences of Europe. (See Figs. 184, 186, 213).

Want of space forbids more than a passing reference to the rural castles of the nobility, rivaling those of the king. Among them Bury, La Rochefoucauld, Bournazel, and especially **Azay-le-Rideau** (1520) and **Chenonceaux** (1515–23), may be mentioned, all displaying that love of rural pleasure, that hatred of the city and its confinement, which so distinguish the French from the Italian Renaissance.

OTHER BUILDINGS. The original **Hôtel-de-Ville** (town hall), of Paris, begun during this reign from plans by *Pierre Chambiges* (?), and completed under Henry IV,* was the most important edifice of a class which in later periods numbered many interesting structures. The town hall of **Beaugency** (1527) is one of the best of minor public buildings in France, and in its elegant treatment of a simple two-storied façade may be classed with the **Maison François I,** at Paris. This stood formerly at Moret, whence it was transported to Paris and re-erected about 1830 in somewhat modified form. The large city houses of this period are legion; we can mention only the Hôtel Carnavalet at Paris; the Hôtel Bourgtheroude at Rouen; the Hôtel d'Ecoville at Caen; the archbishop's palace at Sens, and a number of houses at Toulouse and Orléans. The **Tomb of Louis XII,** at St. Denis, deserves especial mention for its fine proportions and beautiful arabesques.

THE ADVANCED RENAISSANCE. By the middle of the sixteenth century the new style had lost much of its earlier charm. The orders, used with increasing frequency, were more and more conformed to antique precedents. Façades were flatter

*Greatly enlarged 1837–46, rebuilt 1883.

and simpler, cornices more pronounced, arches more Roman in treatment, and a heavier style of carving took the place of the delicate arabesques of the preceding age. The reigns of Henry II (1547–59) and Charles IX (1560–74) were especially distinguished by the labors of three celebrated architects: *Pierre Lescot* (1515–78), who continued the work on the southwest angle of the Louvre; *Jean Bullant* (1515–78), to whom are due the right wing of Ecouen and the porch of colossal Corinthian columns in the left wing of the same, built under Francis I; and, finally, *Philibert de l'Orme* (1515–70). *Jean Goujon* (1510–72) also executed during this period most of the remarkable architectural sculptures which have made his name one of the most illustrious in the annals of French art. Chief among the works of de l'Orme was the palace of the **Tuileries,** built under Charles IX for Cathérine de Médicis, not far from the Louvre, with which it was ultimately connected by a long gallery. Of the vast plan conceived for this palace, and comprising a succession of courts and wings, only a part of one side was erected (1564–72). This consisted of a domical pavilion, flanked by low wings only a story and a half high, to which were added two stories under Henry IV, to the great advantage of the design. Another masterpiece of his was the **Château d'Anet,** built in 1552 by Henry II for Diane de Poitiers, of which, unfortunately, only fragments survive. This beautiful edifice, while retaining the semi-military moat and bastions of feudal tradition, was planned with classic symmetry, adorned with superposed orders, court arcades, and rectangular corner-pavilions, and provided with a domical cruciform chapel, the earliest of its class in France. All the details were unusually pure and correct, with just enough of freedom and variety to lend a charm wanting in later works of the period. To the reign of Henry II belong also the châteaux of Ancy-le-Franc,* Verneuil, Chantilly (the "petit château," by

*Recently proved to have been designed by *Serlio.*

Bullant), the banquet-hall over the bridge at Chenonceaux (1556), several notable residences at Toulouse, and the tomb of Francis I at St. Denis. The châteaux of **Pailly** and **Sully,** distinguished by the sobriety and monumental quality of their composition, in which the orders are important elements, belong to the reign of Charles IX, together with the Tuileries, already mentioned.

FIG. 185.—THE LUXEMBURG, PARIS.*

THE CLASSIC PERIOD: HENRY IV. Under this energetic but capricious monarch (1589–1610) and his Florentine queen, Marie de Médicis, architecture entered upon a new period of activity and a new stage of development. Without the charm of the early Renaissance or the stateliness of the age of Louis XIV, it has a touch of the Baroque, attributable partly to the

* The façade here shown is modern, but reproduces the original garden-front as it was before the enlargement in 1842 to nearly double the original area.

influence of Marie de Médicis and her Italian prelates, and partly to the Italian training of many of the French architects. The great work of this period was the extension of the Tuileries by *J. B. du Cerceau*, and the completion, by *Métézeau* and others, of the long gallery next the Seine, begun under Henry II, with the view of connecting the Tuileries with the Louvre. In this part of the work colossal orders were used with indifferent effect. Next in importance was the addition to Fontainebleau of a great court to the eastward, whose relatively quiet and dignified style offers less contrast than one might expect to the other wings and courts dating from Francis I. More successful architecturally than either of the above was the **Luxemburg** palace, built for the queen by *Salomon DeBrosse*, in 1616 (Fig. 185). Its plan presents the favorite French arrangement of a main building separated from the street by a garden or court, the latter surrounded on three sides by low wings containing the dependencies. Externally, rusticated orders recall the garden-front of the Pitti at Florence; but the scale is smaller, and the projecting pavilions and high roofs give it a grace and picturesqueness wanting in the Florentine model. The **Place Royale,** at Paris, and the château of Beaumesnil, illustrate a type of brick-and-stone architecture much in vogue at this time, stone quoins decorating the windows and corners, and the orders being generally omitted.

Under Louis XIII the Tuileries was extended northward and the Louvre as built by Lescot was doubled in size by the architect, *J. Lemercier*, the Pavilion de l'Horloge being added to form the centre of the enlarged court façade.

CHURCHES. To this reign belong also the most important churches of the period. The church of **St. Paul-St. Louis,** at Paris (1627, by *Derrand*), though disfigured by an overloaded and uninteresting front, is not without merit in its interior design and proportions. Its internal dome is the earliest in Paris. Far superior is the chapel of the **Sorbonne,** a well-

designed domical church by *Jacques Lemercier* (1590–1654), with a sober and appropriate exterior treated with superposed orders. It was begun in 1635.

In the same general style, though built in the early part of the following reign, are the churches of **St. Roch** (1653), by *J. Lemercier* and *R. de Cotte*, and **St. Sulpice,** by *L. Levau* (*c.* 1660). The latter of the two is of imposing size. All four churches are marked by great dignity and simplicity of internal design. Constructed and vaulted wholly in stone, they avoid the pretentious sham and stucco of the contemporary Italian churches, but the lack of painted decorations renders them somewhat cold and severe in effect internally.

PERIOD OF LOUIS XIV. This was an age of remarkable literary and artistic activity, pompous and pedantic in many of its manifestations, but distinguished also by productions of a very high order. Although contemporary with the Italian Baroque—Bernini having been the guest of Louis XIV—the exterior architecture of this period was free from the wild extravagances of that style. In its often cold and correct dignity it resembled rather that of Palladio, making large use of the orders, and tending rather to monotony than to overloaded decoration. In interior design there was more of lightness and caprice, displayed in a fanciful style of relief ornamentation by scrolls, wreaths, shells, and a delicate but highly decorative system of wall-paneling. The whole was saved from triviality only by the controlling lines of the architecture which framed it. The **Galerie d'Apollon,** built during this reign over the Petite Galerie in the Louvre, illustrates this by the sumptuous dignity of its interior treatment.

VERSAILLES. This immense palace, built about an already existing villa of Louis XIII, was the work of *Levau* (1612–1670) and *J. H. Mansart* (1647–1708). Its erection, with the laying out of its marvellous park by the great *Le Nôtre* (1613–1700), almost exhausted the resources of the realm, but with

results quite incommensurate with the outlay. In spite of its vastness, its exterior is commonplace; the orders are used with singular monotony, which is not redeemed by the deep breaks and projections of the main front. There is no controlling or dominant feature; there is no adequate entrance or approach; the grand staircases are badly placed and unworthily treated, and the different elements of the plan are combined with singular lack of the usual French sense of monumental and

FIG. 186.—COLONNADE OF LOUVRE.

rational arrangement. The chapel is by far the best single feature in the design and is worthy of high praise for its elegance, both externally and internally; and the Galerie des Glaces is one of the most magnificent halls in Europe.

Far more successful on the whole was the completion of the Louvre, in 1688, from the designs of *Claude Perrault* (1633–1688), the court physician, whose plans were fortunately adopted in preference to those of Bernini. For the east front he designed a magnificent Corinthian colonnade nearly 600 feet long, with coupled columns upon a plain high basement, and with a central pediment and terminal pavilions (Fig. 186).

The whole forms one of the most imposing façades in existence; but it is a mere decoration, obviously designed for the adornment of the open square in front of it, and having no practical relation to the building behind it. Its height required the addition of a third story to match it on the north and south sides of the court, which as thus completed quadrupled the original area proposed by Lescot. Fortunately the style of Lescot's work was retained throughout in the court façades, while externally the colonnade was recalled on the reconstructed south front by a colossal order of pilasters. The Louvre as completed by Louis XIV was a stately and noble palace, as remarkable for the surpassing excellence of the sculptures of Jean Goujon as for the dignity and beauty of its architecture. Taken in connection with the Tuileries, it was unrivalled by any place in Europe except the Vatican.

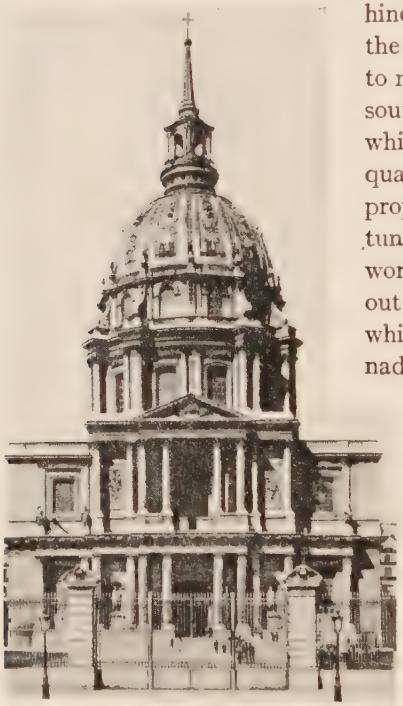

FIG. 187.—DOME OF THE INVALIDES.

OTHER BUILDINGS. To Louis XIV is also due the nobly planned but externally uninteresting **Hôtel des Invalides** or veterans' asylum, at Paris, by *L. Bruant.* To the chapel of this institution was added, in 1680–1706, the celebrated **Dome**

of the Invalides, a masterpiece by *J. H. Mansart.* In plan it somewhat resembles Bramante's scheme for St. Peter's—a Greek cross with domical chapels in the four angles and a dome over the centre. The exterior (Fig. 187), with the lofty gilded dome on a high drum adorned with engaged columns, is somewhat high for its breadth, but is a harmonious and impressive design; and the interior, if somewhat cold, is elegant and well proportioned. The chief innovation in the design was the wide separation of the interior stone dome from the lofty exterior decorative cupola and lantern of wood, this separation being designed to meet the conflicting demands of internal and external effect. An intermediate shell of stone, pierced with openings for light, receives the painting, seen through a large oculus in the lower dome. This is the earliest triple-shell dome. To the same architect is due the formal monotony of the **Place Vendôme.** One of the most pleasing designs of the time is the **Château de Maisons** (1658), by *F. Mansart* (1598–1666), uncle of J. H. Mansart. In this the proportions of the central and terminal pavilions, the mass and lines of the steep roof *à la Mansarde,* the simple and effective use of the orders, and the refinement of all the details impart a grace of aspect rare in contemporary works. The same qualities appear in his other works, as in the west wing at Blois for

FIG. 188.—FAÇADE OF ST. SULPICE, PARIS.

Gaston d'Orléans and in the **Val-de-Grace,** begun by him in 1645 but continued and completed by *Lemercier, Le Muet* and *G. Le Duc,* a domical church of excellent proportions. Many important residences for persons of noble rank or large fortune were erected during this reign, among which may be mentioned the earlier portion of the **Palais Royal,** the **Hôtel Lambert** on the Ile St. Louis by Levau (1645), and the extension of the Hotel Carnavalet by F. Mansart. The want of space forbids mention of other buildings of this period.

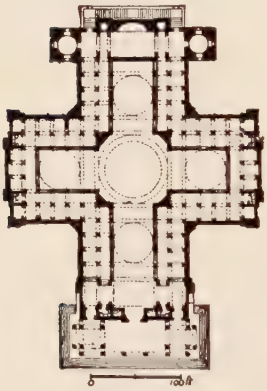

FIG. 189.—PLAN OF PANTHÉON, PARIS.

THE DECLINE. Under Louis XV the pedantry of the classic period gave place to a protracted struggle between license and the severest classical correctness. The exterior designs of this time were often even more uninteresting and bare than under Louis XIV; while, on the other hand, interior decoration tended toward an unregulated fancifulness in which straight lines and right angles almost disappeared and structural considerations were ignored. There was originality and charm in much of this decoration, but it too often degenerated into a vulgar extravagance.

In public buildings of a seriously monumental character, however, this "rocaille" decoration was little used, and a severe classicism manifests itself throughout. The façade of **St. Sulpice** (Fig. 188) at Paris, built by *Servandoni* in 1755, onto the church already referred to on page 334, is a remarkably dignified and successful composition.

In the domical church of the **Panthéon** at Paris, begun in 1755, by *Soufflot* (1713–1781), the greatest ecclesiastical monu-

ment of its time in France, this classical correctness dominates the interior as well as the exterior. The four arms of the cross, measuring 362 × 267 feet, are dome-vaulted and provided with double aisles separated by Corinthan columns. The central dome, 69 feet in diameter, is 265 feet high, surrounded externally by a superb Corinthian peristyle. It comprises three shells, all of stone, the intermediate ovoid shell serving to support the lantern.* There is a noble portico of eighteen colossal Corinthian columns. The whole structure is notable for the cold perfection of its classic elegance.

FIG. 190.—EXTERIOR OF PANTHÉON, PARIS.

PUBLIC SQUARES. Much attention was given to the embellishment of open spaces in the cities, for which the classic style was admirably suited. The most important work of this kind was that on the north side of the Place de la Concorde, Paris. This splendid square, perhaps on the whole, the finest in Europe (though may of its best features belong to a later date), was at this time adorned with the two monumental colonnades by *Gabriel* (1698–1782). These colonnades, which form the decorative fronts for blocks of houses, deserve praise

* In the peristyle and the triple shell Soufflot evidently applied suggestions derived from St. Paul's, London (see p. 346, Fig. 194).

for the beauty of their proportions as well as for the excellent treatment of the arcade on which they rest, and of the pavilions at the ends.

Under Louis XVI (1774–1783), the classical reaction begun under Louis XV, developed a phase of greater purity and severity in both interior decoration and exterior design. No very great buildings were undertaken, but the "palace" of the Légion d'Honneur, many fine residences, and especially certain interiors at Versailles and Fontainebleau, remodeled during this reign, exhibit the new taste of the period (see p. 370).

IN GENERAL. French Renaissance architecture is marked by good proportions and harmonious and appropriate detail. Its most picturesque phase was unquestionably that of Francis I, so far, at least, as concerns exterior design. It steadily progressed, however, in its mastery of planning; and in its use of projecting pavilions crowned by dominant masses of roof, it succeeded in preserving, even in severely classic designs, a picturesqueness and variety otherwise impossible. Roofs, dormers, chimneys, and staircases it treated with especial success; and in these matters, as well as in monumental dispositions of plan, the French have largely retained their pre-eminence to our own day.

MONUMENTS. (Mainly supplementary to text. Ch. = château; P. = palace; C. = cathedral; Chu. = church; H. = hôtel; T. H. = town hall or *hôtel de ville*).

TRANSITION: Ch. Blois, E. wing, 1499; Ch. Meillant; Ch. Chaumont; T. H. Amboise, 1502-05.

FRANCIS I: Ch. Nantouillet, 1517-25; Ch. Blois, W. wing (afterward demolished) and N. wing, 1520-30; H. Lallemant, Bourges, 1520; Ch. Villers-Cotterets, 1520-59; P. of Archbishop, Sens, 1521-35; P. Fontainebleau (Cour Ovale, Cour d'Adieux, Gallery Francis I, 1527-34; Peristyle, Chapel St. Saturnin, 1540-47, by *Gilles le Breton;* Cour du Cheval Blanc, 1527-31, by *P. Chambiges*); H. Bernuy, Toulouse, 1528-39; P. Granvelle, Besançon, 1532-40; T. H. Niort, T. H. Loches, 1532-43; H. de Ligeris (Carnavalet), Paris, 1544, by *P. Lescot;* churches of Gisors, nave and façade, 1530; La

Dalbade, Toulouse, portal, 1530; St. Symphorien, Tours, 1531; Tillières, 1534-46.

Henry II–Henry III: Fontaine des Innocents, Paris, 1547-50, by *P. Lescot* and *J. Goujon;* tomb Francis I, at St. Denis, 1555, by *Ph. de l'Orme;* H. Catelan, Toulouse, 1555; tomb Henry II, at St. Denis, 1560; portal S. Michel, Dijon, 1564; Ch. Sully, 1567; T. H. Arras, 1573 (destroyed); P. Fontainebleau (Cour du Cheval Blanc remodelled, 1564-66, by *P. Girard;* Cour de la Fontaine, same date); T. H. Besançon, 1582; Ch. Charleval, 1585, by *J. B. de Cerceau.*

Styles of Henry IV and Louis XIII: P. Fontainebleau (Galerie des Cerfs, Chapel of the Trinity, Baptistery, etc.); P. Tuileries (Pav. de Flore, by *du Cerceau,* 1590-1610; long gallery continued); Hôtel Vogüé, at Dijon, 1607; Place Dauphine, Paris, 1608; P. de Justice, Paris, Great Hall, by *S. de Brosse,* 1618; H. Sully, Paris, 1624-39; P. Royal, Paris, by *J. Lemercier,* for Cardinal Richelieu, 1627-39; P. Louvre doubled in size, by the same; P. Tuileries (N. wing, and Pav. Marsan, long gallery completed); T. H. Reims, 1627; façade St. Étienne du Mont, Paris, 1610; of St. Gervais, Paris, 1616-21, by *S. de Brosse*; T. H. Paris, completed by *P.* and *A. Guillain* (enlarged 1837-46 by *Godde* and *Le Sueur;* burned 1871).

Style of Louis XIV: T. H. Lyons, 1646; Tuileries altered by Le Vau, 1664; observatory at Paris, 1667-72; arch of St. Denis, Paris, 1672, by *Blondel;* Arch of St. Martin, 1674, by *Bullet;* Banque de France (Hôtel Toulouse), by *de Cotte,* H. de Luyne, H. Soubise 1708-40, (partly by *Boffrand*), all in Paris; Ch. Chantilly; Ch. de Tanlay; P. St. Cloud; Place des Victoires, 1685; Chu. St. Sulpice, Paris, by *Le Vau* (façade, 1755); Chu. St. Roch, Paris, 1653, by *Lemercier* and *de Cotte;* Notre Dame des Victoires, Paris, 1656, by *Le Muet* and *Bruant.*

The Decline: P. Bourbon, 1722 (by *Lassurance* and *Gabriel*); T. H. Rouen; Fontaine de Grenelle, by *Bouchardon,* 1739; École Militaire, 1752-58, by *Gabriel;* P. Louvre, court completed, 1754, by the same; Madeleine begun, 1764 (redesigned and completed early in 19th century by *Vignon*); H. des Monnaies (Mint), by *Antoine;* École de Médecine, 1774, by *Gondouin;* P. Royal, Great Court, 1784, by *Louis;* Théâtre Français, 1784 (all the above at Paris); Grand Théâtre, Bordeaux, 1785-1800, by *Louis;* Préfecture at Bordeaux, by the same; Ch. de Compiègne, 1770, by *Gabriel;* P. Versailles, theatre and Petit Trianon by the same; H. Montmorency, Soubise, de Varennes, and the Petit Luxembourg, all at Paris, by *de Cotte;* public squares at Nancy, Bordeaux, Valenciennes, Rennes, Reims.

CHAPTER XXIII

RENAISSANCE ARCHITECTURE IN GREAT BRITAIN AND THE NETHERLANDS

BOOKS RECOMMENDED: As before, Fergusson, Palustre. Also, Belcher and Macartney, *Later Renaissance Architecture in England.* Von Bezold, *Die Baukunst der Renaissance in Deutschland, Holland, Belgien und Dänemark* (in *Hdbuch de Arch.*) Billings, *Baronial and Ecclesiastical Antiquities of Scotland.* Blomfield, *A History of Renaissance Architecture in England.* Campbell, *Vitruvius Britannicus.* Ewerbeck, *Die Renaissance in Belgien und Holland.* Galland, *Geschichte der Holländischen Baukunst im Zeitalter der Renaissance.* Gotch and Brown, *Architecture of the Renaissance in England.* Loftie, *Inigo Jones and Wren.* Nash, *Mansions of England.* Papworth, *Renaissance and Italian Styles of Architecture in Great Britain.* Richardson, *Architectural Remains of the Reigns of Elizabeth and James I.* Schayes, *Histoire de l'architecture en Belgique.*

THE TRANSITION. The architectural activity of the sixteenth century in England was chiefly devoted to the erection of vast country mansions for the nobilty and wealthy *bourgeoisie.* In these seigniorial residences a degenerate form of the Gothic, known as the Tudor style, was employed during the reigns of Henry VII and Henry VIII, and they still retained much of the feudal aspect of the Middle Ages. This style, with its broad, square windows and ample halls, was well suited to domestic architecture, as well as to collegiate buildings, of which a considerable number were erected at this time. Among the more important palaces and manor-houses of this period are the earlier parts of Hampton Court, Haddon and Hengreave Halls, and the now ruined castles of Raglan and Wolterton.

ELIZABETHAN STYLE. Under Elizabeth (1558–1603) the progress of classic culture and the employment of Dutch and Italian artists led to a gradual introduction of Renaissance forms, which, as in France, were at first mingled with others of Gothic origin. Among the foreign artists were the versatile Holbein from Germany, Trevigi and Torregiano from Italy, and Theodore Have, Bernard Jansen, and Gerard Chrismas from Holland. The pointed arch disappeared, and the orders began to be used as subordinate features in the decoration of doors, windows, chimneys and mantels. Open-work balustrades replaced externally the heavy Tudor battlements, and a peculiar style of carving in flat relief-patterns, resembling *appliqué* designs cut out with the jig-saw and attached by nails or rivets, was applied with little judgment to all possible features. German artisans of inferior taste were much employed on the details of buildings, during both this and the following reign. Ceilings were commonly finished in plaster, with elaborate interlacing patterns in low relief; and this, with the increasing use of interior woodwork, gave to the mansions of this time a more homelike but less monumental aspect internally. English architects, like Smithson and Thorpe, now began to win the patronage at first monopolized by foreigners. In **Wollaton Hall** (1580), by Smithson, the orders were used for the main composition with mullioned windows, much after the fashion of **Longleat House,** completed a year earlier, by his master, John of Padua. During the following period, however (1590–1610), there was a reaction toward the Tudor practice, and the orders were again relegated to subordinate uses. Of their more monumental employment, the **Gate of Honor** of Caius College, Cambridge, is one of the earliest examples. Hardwicke and Charlton Halls, and Burghley (Fig. 191), Hatfield, and Holland Houses are noteworthy monuments of the style.

JACOBEAN STYLE. During the reign of James I (1603–25),

the orders and details of classic origin came into more general use, but with little appreciation of their function and artistic possibilities. Many of the interiors in the great manor-houses of the time are, however, effective designs, retaining something of the picturesque charm of the Elizabethan period. But the style produced no important public buildings, and soon gave way to a more rigid classicism.

FIG. 191.—BURGHLEY HOUSE.

CLASSIC PERIOD. If the classic style was late in its appearance in England, its final sway was complete and long-lasting. It was *Inigo Jones* (1572–1652) who first introduced the correct and monumental style of the Italian masters of classic design. For Palladio, indeed, he seems to have entertained a sort of veneration, and the villa which he designed at Chiswick was a reduced copy of Palladio's Villa Capra, near Vicenza. This and other works of his show a failure to appreciate the unsuitability of Italian conceptions to the climate

and tastes of Great Britain; his efforts to popularize Palladian architecture, without the resources which Palladio controlled in the way of decorative sculpture and painting, were consequently not always happy in their results. His greatest work was the design for a new **Palace at Whitehall,** London. Of this colossal scheme, which, if completed, would have ranked as the grandest palace of the time, only the **Banqueting Hall** (now used as a museum) was ever built (Fig. 192). It is an effective composition in two stories, rusticated throughout and adorned with columns and pilasters, and contains a fine vaulted hall in three aisles. The plan of the palace, which was to have measured 1,152 × 720 feet, was excellent, largely conceived and carefully studied in its details, but it was wholly beyond the resources of the kingdom. The garden-front of **Somerset House** (1632; demolished) had the same qualities of simplicity and dignity, recalling the works of Sammichele. Wilton House, Coleshill, the villa at Chiswick, and St. Paul's, Covent Garden, are the best known of his works, showing him to have been a designer of ability, but hardly of the consummate genius which his admirers attribute to him.

FIG. 192.—BANQUETING HALL, WHITEHALL.

ST. PAUL'S CATHEDRAL. The greatest of Jones's successors was *Sir Christopher Wren* (1632–1723), principally known as the architect of **St. Paul's Cathedral,** London, built to re-

place the earlier Gothic cathedral destroyed in the great fire of 1666. It was begun in 1675, and its designer had the rare good fortune to witness its completion in 1710. The plan, as finally adopted, retained the general proportions of an English Gothic church, measuring 480 feet in length, with transepts 250 feet long, and a grand rotunda 108 feet in diameter at the crossing (Fig. 193). The style was strictly Italian, treated with sobriety and dignity, if somewhat lacking in variety and inspiration. Externally two stories of the Corinthian order appear, the upper story being merely a screen to hide the clearstory and give greater height and mass to the long exterior of the cathedral, a device somewhat open to criticism. The dominant feature of the design is the dome over the central area. It consists of an inner shell, reaching a height of 216 feet, above which rises the exterior dome of wood, surmounted by a stone lantern, the summit of which is 360 feet from the pavement (Fig. 194). This exterior dome, springing from a high drum surrounded by a magnificent peristyle, gives to the otherwise somewhat commonplace exterior of the cathedral a signal majesty of effect. Next to the dome the most successful part of the design is the west front, with its two-storied porch and flanking bell-turrets. Internally the great length detracts somewhat from the effect of the dome, and the interior detail lacks distinction. The much discussed mosaic decoration of the choir, added in recent years, has somewhat relieved the former bareness of this interior. The central area itself, in spite of the awkward treatment of the four smaller arches of the eight which support the dome, is

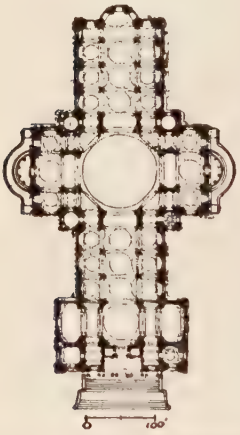

FIG. 193.—PLAN OF ST. PAUL'S, LONDON.

a noble design, occupying the whole width of the three aisles, like the Octagon at Ely (see p. 236), and producing a striking effect of amplitude and grandeur. The dome above it is constructively interesting from the employment of a cone of brick masonry to support the stone lantern which rises above the exterior wooden shell. The lower part of the cone forms the

FIG. 194.—EXTERIOR OF ST. PAUL'S CATHEDRAL.

drum of the inner dome, its contraction upward being intended to produce a perspective illusion of increased height.

St. Paul's ranks among the five or six greatest domical buildings of Europe, and is the most imposing modern edifice in England.

WREN'S OTHER WORKS. Wren was conspicuously successful in the designing of parish churches in London. **St. Stephen's,** Walbrook, is the most admired of these, with a dome resting on eight columns. Wren may be called the in-

ventor of the English Renaissance type of steeple, in which a conical or pyramidal spire is harmoniously added to a belfry on a square tower with classic details. The steeple of **Bow Church,** Cheapside, is the most successful example of the type. In secular architecture Wren's most important works were the plan for rebuilding London after the Great Fire; the new court-yard of Hampton Court, a quiet and dignified composition in brick and stone; the pavilions and colonnade of **Greenwich Hospital;** the Sheldonian Theatre at Oxford, and the Trinity College Library at Cambridge. Without profound originality, these works testify to the sound good taste and intelligence of their designer.

THE EIGHTEENTH CENTURY. The Anglo-Italian style as used by Jones and Wren continued in use through the eighteenth century, during the first half of which a number of important country-seats and some churches were erected. *Van Brugh* (1666–1726), *Hawksmoor* (1666–1736), and *Gibbs* (1683–1754) were then the leading architects. Van Brugh was especially skilful in his dispositions of plan and mass, and produced in the designs of Blenheim and Castle Howard effects of grandeur and variety of perspective hardly equalled by any of his contemporaries in France or Italy. **Blenheim,** with its monumental plan and the sweeping curves of its front (Fig. 195), has an unusually palatial aspect, though the striving for picturesqueness is carried too far. Castle Howard is simpler, depending largely for effect on a somewhat inappropriate dome. To Hawksmoor, his pupil, are due **St. Mary's, Woolnoth** (1715),

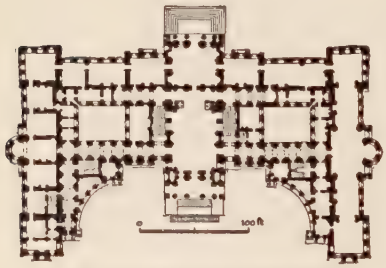

FIG. 105.—PLAN OF BLENHEIM.

at London, in which by a bold rustication of the whole exterior and by windows set in large recessed arches he was enabled to dispense largely with the orders; St. George's, Bloomsbury; the new quadrangle of All Souls at Oxford, and some minor works. The two most noted designs of James Gibbs are **St. Martin's-in-the-Fields,** at London (1726), and the **Radcliffe Library,** at Oxford (1747). In the former the use of a Corinthian portico and of a steeple apparently mounted on the roof, with no visible lines of support from the ground, though open to criticism, adds greatly to the splendor of the edifice, which is marked by excellent proportions and general harmony and appropriateness of design (Fig. 196). The Radcliffe Library is a circular domical hall surrounded by a lower circuit of alcoves and rooms, the whole treated with straightforward simplicity and excellent proportions. St. Mary-le-Strand, London, is another work of Gibbs worthy of mention. Colin Campbell, Flitcroft, Kent and Wood, contemporaries of Gibbs, may be dismissed with passing mention.

FIG. 196.—ST. MARTIN'S-IN-THE-FIELDS, LONDON.

Sir William Chambers (1726–96) was the greatest of the later eighteenth-century architects. His fame rests chiefly on his *Treatise on Civil Architecture,* and the extension and re-

modeling of **Somerset House,** in which he retained the general *ordonnance* of Inigo Jones' design, adapting it to a frontage of some 600 feet. *Robert Adam,* the designer of Keddlestone Hall and of **Edinburgh University;** the two *Dances,* who designed the Mansion House and Newgate Prison, at London—the latter a vigorous and appropriate composition without the orders (recently demolished)—and *Sir John Soane,* the architect of the Bank of England, close the list of noted architects of the eighteenth century. While the works of this period are deficient in artistic creativeness and spontaneity they were nearly all dignified and scholarly designs.

BELGIUM. As in all other countries where the late Gothic style had been highly developed, Belgium was slow to accept the principles of the Renaissance in art. Long after the dawn of the sixteenth century the Flemish architects continued to employ their highly florid Gothic alike for churches and town-halls, with which they chiefly had to do. The earliest Renaissance buildings date from 1530–40, among them being the **Hôtel** du Saumon at Malines, at Bruges the Ancien Greffe, by *Jean Wallot,* and at Liège the **Archbishop's Palace,** by *Borset.* The last named, in the singular and capricious form of the arches and baluster-like columns of its court, reveals the taste of the age for what was *outré* and odd; a taste partly due, no doubt, to Spanish influences, as Belgium was in reality from 1506 to 1712 a Spanish province, and there was more or less interchange of artists between the two countries. The **Hôtel de Ville** at Antwerp, by *Cornelius de Vriendt* or *Floris* (1518–75), erected in 1565, is the most important monument of the Renaissance in Belgium. Its façade, 305 feet long and 102 feet high, in four stories, is an impressive creation in spite of its somewhat monotonous fenestration and the inartistic repetition in the third story of the composition and proportions of the second. The basement story forms an open arcade, and an open colonnade or loggia runs along under the roof,

thus imparting to the composition a considerable play of light and shade, enhanced by the picturesque central pavilion which rises to a height of six stories in diminishing stages. The style is almost Palladian in its severity, but in general the Flemish architects disdained the restrictions of classic canons, preferring a more florid and fanciful effect than could be obtained by

De Vriendt's other works were mostly designs for altars, tabernacles and the like; among them the rood-screen in Tournay Cathedral. His influence is seen in the Hôtel de Ville at Flushing (1594).

FIG. 197.— RENAISSANCE HOUSES, BRUSSELS.

The ecclesiastical architecture of the Flemish Renaissance is almost as destitute of important monuments as is the secular. **Ste. Anne** at Bruges fairly illustrates the type, which is characterized in general by heaviness of detail and a cold and bare aspect internally. The Renaissance in Belgium is best exemplified, after all, by minor works and ordinary dwellings, many of which have considerable artistic grace, though they are quaint rather than monumental (Fig. 197). Stepped gables, high dormers, and volutes flanking each diminishing stage of the design, give a certain piquancy to the street architecture of the period.

Except at Louvain and Ypres the Renaissance monuments of Belgium suffered less damage than the mediæval, and no Renaissance building of the first importance was destroyed in the Great War.

HOLLAND. The Renaissance produced in Holland few monuments of consequence. It began there, as in many other places, with minor works in the churches, due largely to Flemish or Italian artists. About the middle of the sixteenth century two native architects, *Sebastian van Noye* and *William van Noort*, first popularized the use of carved pilasters and of gables or steep pediments adorned with carved scallop-shells, in remote imitation of the style of Francis I. The principal monuments of the age were town-halls, and, after the war of independence in which the yoke of Spain was finally broken (1566–79), local administrative buildings—mints, exchanges and the like. The **Town Hall** of **The Hague** (1565), with its stepped gable or great dormer, its consoles, statues, and octagonal turrets, may be said to have inaugurated the style generally followed after the war. Owing to the lack of stone, brick was almost universally employed, and stone imported by sea was only used in edifices of exceptional cost and importance. Of these the **Town Hall** at Amsterdam holds the first place. Its façade is of about the same dimensions as the one at Antwerp, but compares unfavorably with it in its monotony and want of interest. The **Leyden Town Hall,** by the Fleming, *Lieven de Key* (1597), the Bourse or Exchange and the Hanse House at Amsterdam, by *Hendrik de Keyser*, the Weighing House at Alkmaar and the Market at Haarlem, are also worthy of mention, though many lesser buildings, built of brick combined with enamelled terra-cotta and stone, possess quite as much artistic merit.

DENMARK. In Denmark the monuments of the Renaissance may almost be said to be confined to the reign of Christian IV (1588–1648), and do not include a single church of any importance. The royal castles of the **Rosenborg** (1610) and Christiansborg (1731) at Copenhagen, and the **Fredericksborg** (1580–1624), the latter by a Dutch architect, are interesting and picturesque in mass, with their fanciful gables,

mullioned windows and numerous turrets, but can hardly lay claim to beauty of detail or purity of style. The Exchange at Copenhagen, built of brick and stone in the same general style (1619–40), is still less interesting both in mass and detail.

The only other important Scandinavian monument deserving of special mention in so brief a sketch as this is the **Royal Palace** at **Stockholm,** Sweden (1698–1753), due to a foreign architect, *Nicodemus de Tessin.* It is of imposing dimensions, and although simple in external treatment, it merits praise for the excellent disposition of its plan, its noble court, imposing entrances, and the general dignity and appropriateness of its architecture.

MONUMENTS. (In addition to those mentioned in text.) ENGLAND, TUDOR STYLE: Several palaces by Henry VIII, no longer extant; Westwood, later rebuilt; Gosfield Hall; Harlaxton.—ELIZABETHAN: Buckhurst, 1565; Kirby House, 1570, both by Thorpe; Caius College, 1570-75, by Theodore Have; "The Schools," Oxford, by Thomas Holt, 1600; Beaupré Castle, 1600.—JACOBEAN: Tombs of Mary of Scotland and of Elizabeth in Westminster Abbey; Audsley End; Bolsover Castle, 1613; Heriot's Hospital, Edinburgh, 1628.—CLASSIC or ANGLO-ITALIAN: St. John's College, Oxford; Queen's House, Greenwich; Coleshill; all by Inigo Jones. 1620-51; Amesbury, by Webb; Combe Abbey; Buckingham and Montague Houses; The Monument, London, 1670, by Wren; Temple Bar, by the same; Winchester Palace, 1683; Chelsea College; Towers of Westminster Abbey, 1696; St. Clement Dane's; St. James's, Westminster; St. Peter's, Cornhill, and many others, all by Wren.—18TH CENTURY: Seaton Delaval and Grimsthorpe, by Van Brugh; Chatsworth; Wanstead House, by Colin Campbell; Treasury Buildings, by Kent.

The most important Renaissance buildings of BELGIUM and HOLLAND have been mentioned in the text.

CHAPTER XXIV

RENAISSANCE ARCHITECTURE IN GERMANY, SPAIN, AND PORTUGAL

BOOKS RECOMMENDED: As before, von Bezold, Fergusson, Palustre. Also, Byne and Stapley, *Spanish Architecture of the Sixteenth Century.* Caveda (tr. Kugler), *Geschichte der Baukunst in Spanien.* Fritsch, *Denkmäler der deutschen Renaissance* (*plates*). Haupt, *Baukunst der Renaissance in Portugal.* Junghändel, *Die Baukunst Spaniens.* Lambert und Stahl, *Motive der deutschen Architektur.* Lübke, *Geschichte der Renaissance in Deutschland.* Ortwein, *Deutsche Renaissance.* Prentice, *Renaissance Architecture and Ornament in Spain.* Schubert, *Geschichte des Barock in Spanien.* Uhde, *Baudenkmäler in Spanien.* Villa Amil, *Hispania artística y monumental.*

AUSTRIA: BOHEMIA. The earliest appearance of the Renaissance in the architecture of the German states was in the eastern provinces. Before the close of the fifteenth century Florentine and Milanese architects were employed in Austria, Bohemia, and the Tyrol, where there are a number of palaces and chapels in an unmixed Italian style. The portal of the castle of Mahrisch-Trübau dates from 1492; while to the early years of the sixteenth century belong a cruciform chapel at Gran, the remodelling of the castle at Cracow, and the chapel of the Jagellons in the same city—the earliest domical structure of the German Renaissance, though of Italian design. The **Schloss Porzia** (1510), at Spital in Carinthia, is a fine quadrangular palace, surrounding a court with arcades on three sides, in which the open stairs form a picturesque interruption with their rampant arches. But for the massiveness of the

details it might be a Florentine palace. In addition to this, the famous **Arsenal** at Wiener-Neustadt (1524), the portal of the Imperial Palace at Vienna (1552), and the **Castle Schalaburg** on the Danube (1530–1601), are attributed to Italian architects, to whom must also be ascribed a number of important works at Prague. Chief among these the **Belvedere** (1536, by *Paolo della Stella*), a rectangular building surrounded by a graceful open arcade, above which it rises with a second story crowned by a curved roof; the Waldstein Palace (1621–29), by *Giov. Marini*, with its imposing loggia; **Schloss Stern,** built on the plan of a six-pointed star (1459–1565) and embellished by Italian artists with stucco ornaments and frescoes; and parts of the palace on the Hradschin, by *Scamozzi*, attest the supremacy of Italian art in Bohemia. The same is true of Styria, Carinthia, and the Tyrol; *e.g.* **Schloss Ambras** at Innsbruck (1570).

GERMANY: PERIODS. The earliest manifestation of the Renaissance in what was until lately the German Empire, appeared in the works of Dürer and Burkmair, and in occasional buildings previous to 1525. The real transformation of German architecture, however, hardly began until after the Peace of Augsburg, in 1555. From that time on its progress was rapid, its achievements being almost wholly in the domain of secular architecture—princely and ducal castles, town halls or *Rathhäuser*, and houses of wealthy burghers or corporations. The Empire was a mere abstraction; Germany was really a loose bundle of small states, most of them having but limited resources, so that anything like an imperial or royal architecture was impossible. The palaces grew up at haphazard about nuclei of mediæval origin, with no single portion to compare with the stately châteaux of the French kings. Church architecture was neglected, owing to the Reformation, which turned to its own uses the existing churches, while the Roman Catholics were too impoverished to replace the edifices they had lost.

The periods of the German Renaissance are less well marked than those of the French; but its successive developments follow the same general progression, divided into three stages:

I. The Early Renaissance, 1525–1600, in which the orders were infrequently used, mainly for porches and for gable decoration. The conception and spirit of most monuments were still strongly tinged with Gothic feeling.

II. The Late Renaissance, 1600–1675, characterized by a dry, heavy treatment, in which too often neither the fanciful gayety of the previous period nor the simple and monumental dignity of classic design appears. Broken curves, large scrolls, obelisks, and a style of flat relief carving resembling the Elizabethan are common. Occasional monuments exhibit a more correct and classic treatment after Italian models.

III. The Decline or Baroque Period, 1675–1800, employing the orders in a style of composition oscillating between the extremes of bareness and of Rococo over-decoration. The ornament shows the influence of the Louis XV and Italian Jesuit styles, being most successful in interior decoration, but externally running sometimes to the extreme of unrestrained fancy.

CHARACTERISTICS. In none of these periods do we meet with the sober, monumental treatment of the Florentine or Roman schools. A love of picturesque variety in masses and sky-lines, inherited from mediæval times, appears in the high roofs, stepped gables and lofty dormers which are universal. The roofs often comprise several stories, and are lighted by lofty gables at either end, and by dormers carried up from the side walls through two or three stories. Gables and dormers alike are built in diminishing stages, each step adorned with a console or scroll, and the whole treated with pilasters or colonnettes and entablatures breaking over each support (Fig. 198). These roofs, dormers, and gables contribute the most noticeable element to the general effect of German Renaissance

buildings, and are commonly the best-designed features in them. The orders are scantily used and usually treated with utter disregard of classic canons, being generally far too massive and overloaded with ornament. Oriels, bay windows, and turrets, starting from corbels or colonnettes, or rarely from the ground, diversify the façade, and spires of curious bulbous patterns give added piquancy to the picturesque skyline. The plans seldom had the monumental symmetry and largeness of Italian and French models; courtyards were often irregular in shape and diversified with balconies and spiral staircase turrets. The national leaning was always toward the quaint and fantastic, as well in the decoration as in the composition. Grotesques, caryatids, *gaînes* (half-figures terminating below in sheath-like supports), fanciful rustication, and many other details give a touch of the Baroque even to works of early date. The same principles were applied with better success to interior decoration, especially in the large halls of the castles and town-halls, and many of their ceilings

FIG. 198.—SCHLOSS HÄMELSCHENBURG.

were sumptuous and well-considered designs, deeply paneled, painted and gilded, in wood or plaster.

CASTLES. The *Schloss* or *Burg* of the German prince or duke retained throughout the Renaissance many mediæval characteristics in plan and aspect. A large proportion of these noble residences were built upon foundations of demolished feudal castles, reproducing in a new dress the ancient round towers and vaulted guard-rooms and halls, as in the Hartenfels at Torgau, the Heldburg (both in Saxony), and the castle of Trausnitz, in Bavaria, among many others. The **Castle** at **Torgau** (1540) is one of the most imposing of its class, with massive round and square towers showing externally, and court façades full of picturesque irregularities. In the great **Castle** at **Dresden** the plan is more symmetrical, and the Renaissance appears more distinctly in the details of the Georgenflügel (1530–50), though at that early date the classic orders were almost ignored. The portal of the Heldburg, however, built in 1562, is a composition quite in the contemporary French vein, with superposed orders and a crowning pediment over a massive basement.

Another important series of castles or palaces are of more regular design, in which the feudal traditions tend to disappear. The majority belong to the end of the sixteenth and beginning of the seventeenth centuries. They are built around large rectangular courts with arcades in two or three stories on one or more sides, but rarely surrounding it entirely. In these the segmental arch is more common than the semicircular, and springs usually from short and stumpy Ionic or Corinthian columns. The rooms and halls are arranged *en suite*, without corridors, and a large and lofty banquet hall forms the dominant feature of the series. The earliest of these regularly planned palaces are of Italian design. Chief among them is the **Residenz** at **Landshut** (1536–43), with a thoroughly Roman plan, by pupils of Giulio Romano, and exterior and court

façades of great dignity treated with the orders. More German in its details, but equally interesting, is the **Fürstenhof** at **Wismar,** in brick and terra-cotta, by *Valentino di Lira* and *Van Aken* (1553); while in the **Piastenschloss** at Brieg (1547-72), by Italian architects, the treatment in parts suggests the richest works of the style of Francis I. In other castles the segmental arch and stumpy columns or piers show the German taste, as in the **Plassenburg,** by *Kaspar Vischer* (1554–64), the castle at Plagnitz, and the **Old Castle** at **Stuttgart,** all dating from about 1550–55. **Heidelberg Castle,** in spite of its mediæval aspect from the river and its irregular plan, ranks as the highest achievement of the German Renaissance in palace design. The most interesting parts among its various wings built at different dates—the earlier portions still Gothic in design—are the **Otto Heinrichsbau** (1554) and the **Friedrichsbau** (1601). The first of these appears somewhat simpler in its lines than the second, by reason of having lost its original dormer gables. The orders, freely treated, are superposed in three stories, and

FIG. 199.—THE FRIEDRICHSBAU, HEIDELBERG.

twin windows, niches, statues, *gaînes*, medallions and profuse carving produce an effect of great gayety and richness. The Friedrichsbau (Fig. 199) less quiet in its lines, and with high scroll-gabled and stepped dormers, is on the other hand more soberly decorated and more characteristically German. The Schloss Hämelschenburg (Fig. 198) is designed in somewhat the same spirit, but with even greater simplicity of detail.

TOWN HALLS. These constitute the most interesting class of Renaissance buildings in Germany, presenting a considerable variety of types, but nearly all built in solid blocks without courts, and adorned with towers or spires. A high roof crowns the building, broken by one or more high gables or many-storied dormers. The majority of these town halls present façades much diversified by projecting wings, as at Lemgo and Paderborn, or by oriels and turrets, as at **Altenburg** (1562–64); and the towers which dominate the whole terminate usually in bell-shaped cupolas, or in more capricious forms with successive swellings and contractions, as at Dantzic (1587). A few, however, are designed with monumental simplicity of mass; of these that at **Bremen** (1612) is perhaps the finest, with its beautiful exterior arcade on strong Doric columns. The town hall of Nuremberg is one of the few with a court, and presents a façade of almost Roman simplicity (1613–19); that at **Augsburg** (1615) is equally classic and more pleasing; while at Schweinfurt, Rothenburg (1572), Mülhausen, etc., are others worthy of mention.

CHURCHES. **St. Michael's,** at Munich, is almost the only important church of the first period in Germany (1582), but it is worthy to rank with many of the most notable contemporary Italian churches. A wide nave, covered by a majestic barrel vault, is flanked by side chapels, separated from each other by massive piers and forming a series of gallery bays above. There are short transepts and a choir, all in excellent proportion and treated with details which, if somewhat heavy,

are appropriate and reasonably correct. The **Marienkirche** at Wolfenbüttel (1608) is a fair sample of the parish churches of the second period. In the exterior of this church pointed arches and semi-Gothic tracery are curiously associated with heavy rococo carving. The simple rectangular mass, square tower, and portal with massive orders and carving are characteristic features. Many of the church-towers are well proportioned and graceful structures in spite of the fantastic outlines of their spires. One of the best and purest in style is that of the University Church at Würzburg (1587–1600).

FIG. 200.—ZWINGER PALACE, DRESDEN.

HOUSES. Many of the German houses of the sixteenth and seventeenth centuries would merit extended notice in a larger work, as among the most interesting lesser monuments of the Renaissance. Nuremberg and Hildesheim are particularly rich in such houses, built either for private citizens or for guilds and corporations. Not a few of the half-timbered houses of the time are genuine works of art, though interest chiefly centres in the more monumental dwelling of stone. In this domestic architecture the picturesque quality of German design appears to better advantage than in more monumental edifices, and the broadly stepped gables, corbelled oriels, florid

portals and want of formal symmetry impart to it a peculiar and undeniable charm. The Kaiserhaus and Wedekindsches Haus at Hildesheim; **Fürstenhaus** at Leipzig; Peller, Hirschvogel, and Funk houses at Nuremberg; the Salt House at Frankfurt, and Ritter House at Heidelberg, are a few of the most noted among these examples of domestic architecture.

FIG. 201.—CHURCH OF ST. MARY (MARIEN KIRCHE), DRESDEN.

LATER MONUMENTS. The **Zwinger Palace** at Dresden (1711–22), by *Pöppelmann* (Fig. 200), is the most elaborate and wayward example of the German palace architecture of the third period. Its details are of the most exaggerated rococo type, like confectioner's work done in stone; and yet the building has an air of princely splendor which partly atones for its details. Besides this palace, the domical **Marienkirche** at Dresden (Fig. 201) is one of the best examples of late design. The proportions are good, and the whole is externally a dignified and rational piece of work, though the very theatrical interior deserves severe criticism. At Vienna are a number of palaces of the third period, more interesting for their beautiful grounds and parks than for intrinsic architectural merit, except in some of the

interiors where, as notably in the **Imperial Library** by *Fischer von Erlach* (1650–1723) the wayward capriciousness of the Rococo style was turned to fine decorative account. As in Italy, this was the period of stucco, and although in Vienna this cheap and perishable material was cleverly handled, and the ornament produced was often quaint and effective, the results lack the permanence and dignity of true building in stone or brick, and may be dismissed without further mention.

In minor works the Germans were far less prolific than the Italians or Spaniards. Few of their tombs were of the first importance, though one, the **Sebald Shrine,** in Nuremberg, by *Peter Vischer* (1506–19), is a splendid work in bronze, in the transitional style; a richly decorated canopy on slender metal colonnettes covering and enclosing the sarcophagus of the saint. There are a large number of fountains in the squares of German and Swiss cities which display a high order of design, and are among the most characteristic minor products of German art.

SPAIN. The flamboyant Gothic style sufficed for a while to meet the requirements of the arrogant and luxurious period which in Spain followed the overthrow of the Moors and the discovery of America. But it was inevitable that the Renaissance should in time make its influence felt in the arts of the Iberian peninsula, largely through the employment of Flemish and Italian artists. In jewelry and silverwork, arts which received a great impulse from the importation of the precious metals from the New World, the forms of the Renaissance found special acceptance so that the new style received the name of the *Plateresque* (from *platero*, silversmith). This was a not inept name for the minutely detailed and sumptuous decoration of the early Renaissance, which lasted from 1500 to the accession of Philip II in 1556. It was characterized by surface decoration spreading over broad areas, especially around doors and windows, florid escutcheons and Gothic details mingling with delicately chiselled arabesques. Decorative

pilasters with broken entablatures and carved baluster-shafts were employed with little reference to constructive lines, but with great refinement of detail, in spite of the exuberant profusion of the ornament.

To this style, after the artistic inaction of Philip II's reign, succeeded the coldly classic style practised by *Berruguete* and *Herrera* (1530–1597), and called the *Griego-Romano*. In spite of the attempt to produce works of classical purity, the buildings of this period are for the most part singularly devoid of originality and interest. This style lasted until the middle of the seventeenth century, and in the case of certain works and artists, until its close. It was followed, at least in ecclesiastical architecture, by the so-called *Churrigueresque*, a name derived from the architect *Churriguera* (died 1725), and his sons, who like Maderna and Borromini in Italy, discarded all the proprieties of architecture, and rejoiced in the wildest extravagances of a lawless fancy and debased taste. About the middle of the eighteenth century, however, the advent of a number of Italian architects resulted in a return toward classical correctness.

EARLY MONUMENTS. The earliest ecclesiastical works of the Renaissance period, like the cathedrals of Salamanca and Segovia, were almost purely Gothic in style. Not until 1525 did the new forms begin to dominate in cathedral design. The cathedral at **Jaen,** by *Valdelvira* (1525), an imposing structure with three aisles and side chapels, was treated internally with the Corinthian order throughout. The Cathedral of **Granada** (1529, by *Diego de Siloë*) is especially interesting for its great domical sanctary 70 feet in diameter, and for the largeness and dignity of its conception and details. The cathedral of Malaga, the church of San Domingo at Salamanca, and the monastery of San Girolamo in the same city are either wholly or in part Plateresque, and provided with portals of especial richness of decoration. Indeed, the portal of S. Domingo practically forms the whole façade.

In secular architecture the **Hospital** of **Santa Cruz** at Toledo, by *Enrique de Egaz* (1504–16), is one of the earliest examples of the style. Here, as also in the **University** at **Salamanca** (Fig. 202), the portal is the most notable feature, suggesting both Italian and French models in its details. The Mendoza Palace at Lacalahorra, by an Italian architect, and the great **College** at **Alcalá de Heñares** (1500–17, by *Pedro Gumiel*) are other important early monuments of the Renaissance. In most designs the preference was for long façades of moderate height, with a basement showing few openings, and a *bel étage* lighted by large windows widely spaced. Ornament was chiefly concentrated about the doors and windows, except for the roof balustrades, which were often exceedingly elaborate. Occasionally a decorative motive is spread over the whole façade, as in the **Casa de las Conchas** at Salamanca, adorned with cockle-shells carved at intervals all over the front—a bold and effective device; or the Infantada palace with its spangling of carved diamonds. The courtyard, or *patio*, was an indispensable feature of these buildings, as in

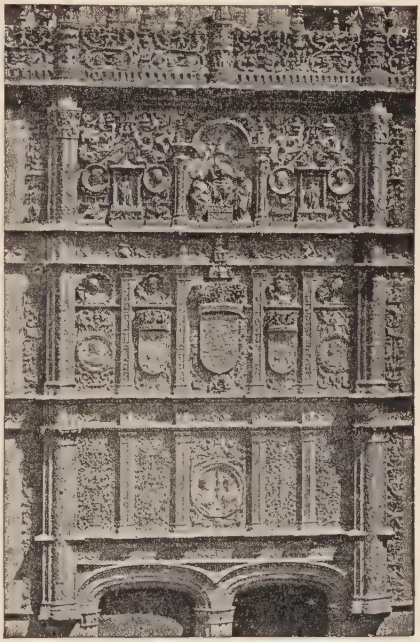

FIG. 202.—DOOR OF THE UNIVERSITY, SALAMANCA.

all hot countries, and was surrounded by arcades frequently of the most fanciful design overloaded with minute ornament, as in the **Infantada** at Guadalajara. The **Casa de Zaporta,** formerly at Saragossa (now removed to Paris; Fig. 203), the Lupiana monastery, the **Archbishop's Palace** at Alcalà de Henares and the **Collegio de los Irlandeses** at Salamanca have patios of simpler design; that of the **Casa de Pilatos** at Seville is almost purely Moorish. Salamanca abounds in buildings of this period.

FIG. 203.—CASA DE ZAPORTA: COURTYARD.

THE GRIEGO-ROMANO. The more classic treatment of architectural designs by the use of the orders was introduced by *Alonzo Berruguete* (1480–1561), who studied in Italy after 1503. The Archbishop's Palace and the Doric **Gate of San Martino,** both at Toledo, were his work, as well as the first palace at Madrid. The Palladio of Spain was, however, *Juan de Herrera*, the architect of **Valladolid Cathedral,** built under Philip V. This vast edifice follows the general lines of the earlier cathedrals of Jaen and Granada, but in a style of classical correctness almost

severe in aspect, but well suited to the grand scale of the church. The masterpiece of this period was the monastery of the **Escurial,** begun by *Juan Battista* of Toledo, in 1563, but not completed until nearly one hundred and fifty years later. Its final architectural aspect was largely due to Herrera. It is a vast rectangle of 740 × 580 feet, comprising a complex of courts, halls, and cells, dominated by the huge mass of the chapel. This last is an imposing domical church covering 70,000 square feet, treated throughout with the Doric order, and showing externally a lofty dome and campaniles with domical lanterns, which serve to diversify the otherwise monotonous mass of the monastery. What the Escurial lacks in grace or splendor is at least in a measure redeemed by its majestic scale and varied sky-lines. The **Palace of Charles V** (Fig. 204), adjoining the Alhambra at Granada, though begun as early as 1527 by *Machuca,* was mainly due to Berruguete, and, although never completed, is an excellent example of the Spanish Palladian style. With its circular court and excellent proportions, this often maligned edifice deserves to be ranked among the most successful examples of the style. During this period the cathedral of Seville received many alterations, and the upper part of the adjoining Moorish tower

FIG. 204.—PALACE OF CHARLES V, GRANADA.

of the **Giralda,** burned in 1395, was rebuilt by *Fernando Ruiz* in the prevalent style, and with considerable elegance and appropriateness of design.

Of the **Palace** at **Madrid,** rebuilt by Philip V after the burning of the earlier palace in 1734, and mainly the work of an Italian, *Ivara:* the Aranjuez palace (1739, by *Francisco Herrera*), and the Palace at **San Ildefonso,** it need only be said that their chief merit lies in their size and the absence of those glaring violations of good taste which generally characterized the successors of Churriguera. In ecclesiastical design these violations of taste were particularly abundant and excessive, especially in the façades and in the sanctuary—huge aggregations of misplaced and vulgar detail, with hardly an unbroken pediment, column, or arch in the whole, yet sometimes, in spite of their extravagance, undeniably picturesque. Some extreme examples of this style are to be found in the Spanish-American churches of the seventeenth and eighteenth centuries, as at Mexico City, Chihuahua and many other cities in Mexico, at Tucson (Arizona), and other places. The least offensive features of the churches of this period were the towers, usually in pairs at the west end, some of them showing excellent proportions and good composition in spite of their execrable details.

Minor architectural works, such as the rood screens in the churches of Astorga and Medina de Rio Seco, and many tombs at Granada, Avila, Alcala, etc., give evidence of superior skill in decorative design, where constructive considerations did not limit the exercise of the imagination.

PORTUGAL. The Renaissance appears to have produced few notable works in Portugal. Among the chief of these are the **Tower,** the church, and the **Cloister** at Belem. These display a riotous profusion of minute carved ornament, with a free commingling of late Gothic details, wearisome in the end in spite of the beauty of its execution (1500–40?). The church

of **Santa Cruz** at Coimbra, and that of **Luz,** near Lisbon, are among the most noted of the religious monuments of the Renaissance, while in secular architecture the royal palace at **Mafra** is worthy of mention beside the Escurial of Madrid, which it rivals in size and architectural dignity. It is the work of *F. Ludwig,* a German architect (1717–1730).

MONUMENTS. (Mainly supplementary to preceding text). AUSTRIA, BOHEMIA, etc.; At Prague, Schloss Stern, 1459-1565; Schwarzenburg Palace, 1544; Waldstein Palace, 1629; Salvator Chapel, Vienna, 1515. At Vienna: Imperial palace, various dates; Schwarzenburg and Lichtenstein palaces, 18th century.

GERMANY AND SWITZERLAND, FIRST PERIOD: Schloss Baden, 1510-20, and part 1569-82; Schloss Merseburg, 1514, with late 16th-century portals; Leignitz, portal, 1533; Landshut, Neue Residenz, 1536-43; Plagnitz, 1550; Schloss Gottesau, 1553-88; castle of Güstrow, 1555-65; Lucerne, Rittersche Palast or "Schlössli," 1557; of Heiligenburg, 1569-87; Münzhof at Munich, 1575; Schloss Trausnitz, 1578-80; 1584-90; castle of Hämelschenburg, 1588-1612.—SECOND PERIOD: Zunfthaus at Basle, 1578, in advanced style; so also Juleum at Helmstädt, 1593-1612; 1592-1613; Spiesshof at Basle, 1600; castle Bevern, 1603; Schloss Bückeburg and church, early 17th century; Dantzic, Zeughaus, 1605; Wallfahrtskirche at Dettelbach, 1613; castle Aschaffenburg, 1605-13; Schloss Weikersheim, 1600-83; Schloss Heiligenburg.—THIRD PERIOD: Zeughaus at Berlin, 1695; palaces by Schlüter at Charlottenburg, and at Berlin, 1696-1706; Catholic church, Dresden, 1738, by Chiaveri; Bruchsal, Ducal Palace, 1720-42; Munich, Amalienburg, 1734, by de Cuvillié; Asam house, 1740; Potsdam, Stadt Schloss, 1740, by Knobelsdorf; Sans Souci, 1751-1768; other palace buildings 1754-1775; Berlin, Royal Library, 1775; the Neue Kirche, 1780.—TOWN HALLS: At Heilbronn, 1535, Görlitz, 1537; Posen, 1550; Mülhausen, 1552; Cologne, porch, 1569; Lübeck, 1570; Gotha, 1574; Emden, 1574-76; Lemgo, 1589; Nordhausen, 1610; Paderborn, 1612-16; Augsburg, 1615-1620, by Holl; Magdeburg, 1691.

SPAIN AND PORTUGAL, 16TH CENTURY: Monastery San Marcos at Leon; palace of the Infanta, Saragossa; Carcel del Corte at Baez; Early Renaissance details in cloisters of Belem; choir of Cath. of Thomar, Portugal, 1509; pulpit in Sta. Cruz, Coimbra, Portugal, 1522; Cath. of Malaga, W. front, 1538, by de Siloë; N. S. da Serra

do Pilar, Gaya, Portugal, 1540-1600; Tavera Hospital, Toledo, 1541, by de Bustamente; Alcazar at Toledo, 1548; Lonja (Town Hall) at Saragossa, 1551; Evora, Portugal, University, 1551-58; cloister Dos Filippes, Thomar, 1557-62; Casa de la Sal, Casa Monterey, at Salamanca; Town Hall, Casa de los Taveras at Seville; Cath. Sé Nova at Coimbra, 1580; Sâo Vicente, Lisbon, 1570-1600.—17TH CENTURY: Circular cloister N. S. do Pilar, Oporto, 1602; Cathedral del Pilar, Saragossa, 1677; Tower del Seo, 1685.—18TH CENTURY: Cathedral of Santiago, 1738; Lonja at Barcelona, 1772.

CHAPTER XXV

THE CLASSIC REVIVALS IN EUROPE

BOOKS RECOMMENDED: As before, Fergusson. Also, Château, *Histoire et caractères de l'architecture en France; and* Lübke, *Geschichte der Architektur.* Gourlier, *Choix d'édifices publics.* A. E. Richardson, *Monumental Classic Architecture in Great Britain and Ireland,* etc. W. H. Ward, *The Architecture of the Renaissance in France, 1495-1830.* (For the most part, however, recourse must be had to the general histories of architecture, and to monographs on special cities or buildings.)

THE EIGHTEENTH CENTURY. By the end of the seventeenth century the Renaissance, properly speaking, had run its course in Europe. Having wearied in turn of the restraints of pure classicism and the extravagances of the Baroque, it had exhausted the springs of original invention. Taste rapidly declined before the growth of the industrial and commercial spirit in the eighteenth century. The ferment of democracy and the disquiet of far-reaching political changes had begun to preoccupy the minds of men to the detriment of all artistic creation, in the absence of which taste tended to swing back towards the safe standards of classic models. But the demand was for a literal copying of the arcades and porticos of Rome, to serve as frontispieces for buildings in which modern requirements should be accommodated to these antique exteriors, instead of controlling the design. The result was a manifest gain in the splendor of the streets and squares adorned by these highly decorative frontispieces, but at the expense of convenience and propriety in the buildings themselves. While

this academic spirit too often sacrificed logic and originality to an arbitrary symmetry and to the supposed canons of Roman design, it also, on the other hand, led to a stateliness and dignity in the planning, especially in the designing of vestibules, stairs, and halls, which render many of the public buildings it produced well worthy of study. The architecture of the Roman Revival was pompous and artificial, but seldom trivial, and its somewhat affected grandeur was a welcome relief from the dullness or extravagance of the styles it replaced.

FIG. 205.—ARC DE L'ÉTOILE, PARIS.

FRANCE. In France the Classic Revival, as we have seen, had made its appearance during the reign of Louis XV in a number of important monuments which expressed the protest of their authors against the caprice of the Rococo style then in vogue. The colonnades of the Garde-Meuble, the façade of St. Sulpice, and the coldly beautiful Panthéon (Figs. 189, 190), testified to the conviction in the most cultured minds of the time that Roman grandeur was to be attained only by copying the forms of Roman architecture with the closest possible approach to correctness. The **Grand Théâtre,** at Bordeaux (1785, by *Victor Louis*), one of the largest and finest theatres

in Europe, was another product of this movement, its stately colonnade forming one of the chief ornaments of the city. Under Louis XVI there was a temporary reaction from this somewhat pompous affectation of antique grandeur; but there were few important buildings erected during that unhappy reign; the **Petit Trianon** by *Gabriel* and the Great Court of the Palais Royal by *V. Louis* are the most notable monuments of this style. The reaction showed itself most effectively in a more delicate and graceful style of interior decoration. It was reserved for the Empire to set the seal of official approval on the Roman Revival under the dominating influence of the great Napoleon. The Arch of Triumph of the Carrousel, behind the Tuileries, by *Percier and Fontaine*, the magnificent Arc de l'Etoile, at the summit of the Avenue of the Champs Elysées, by *Chalgrin;* the wing begun by Napoleon to connect the Tuileries with the Louvre on the land side, and the church of the Madeleine, by *Vignon*, erected as a temple to the heroes of the Grande Armée, were all designed, in accordance with the expressed will of the Emperor himself, in a style as Roman as the requirements of each case would permit. All these monuments, begun between 1806 and 1809, were completed after the Restoration. The **Arch** of the **Carrousel** is a close copy of Roman models carried out with great elegance; that of the **Etoile** (Fig. 205) is a much more original design, of colossal dimensions. Its admirable proportions, simple composition and striking sculptures give it a place among the noblest creations of its class. The **Madeleine** (Fig. 206), externally a Roman Corinthian temple of the largest size, presents internally an almost Byzantine conception with the three pendentive domes that vault its vast nave, but all the details are Roman. However suitable for a pantheon or mausoleum, it seems strangely inappropriate as a design for a Christian church. To these monuments should be added the **Bourse** or Exchange, by *Brongniart*, heavy in spite of its Corinthian peri-

style, and the river front of the **Corps Législatif** (now Chambre des Deputés), added to the rear of the Palais Bourbon by *Poyet*, one of the very few extant examples of a dodecastyle portico with a pediment. All of these designs are characterized by great elegance of detail and excellence of execution, and however inappropriate in style to modern uses, they add immensely to the splendor of the French capital. Unquestion-

FIG. 206.—THE MADELEINE, PARIS.

ably no feature can take the place of a Greek or Roman colonnade as an embellishment for broad avenues and open squares, or as the termination of an architectural vista.

THE GREEK REVIVAL. The Roman revival began, however, to be displaced near the end of the eighteenth century, in England and Germany by the Greek Revival, the result of a newly awakened interest in the long-neglected monuments of Attic art which the discoveries of Stuart and Revett—sent out in 1752 by the London Society of Dilettanti—had once more made known to the world. It led to a veritable *furore*

in England for Greek Doric and Ionic columns, which were applied indiscriminately to every class of buildings, with utter disregard of propriety. The British taste was at this time at its lowest ebb, and failed to perceive the poverty of Greek architecture when deprived of its proper adornments of carving and sculpture, which were singularly lacking in the British examples. Nevertheless the Greek style in England had a long run of popular favor, producing a number of creditable designs, and finally yielding only toward the middle of the last century to the so-called Victorian Gothic, a revival of mediæval forms. In Germany the Greek Revival was characterized by a more cultivated taste and a more rational application of its forms, which were often freely modified to suit modern needs. In France, where the Roman Revival under Louis XV had produced some notable results (see p. 338), and where the influence of the Royal School of Fine Arts (*École des Beaux-Arts*) tended to perpetuate the principles of Roman design, the Greek Revival found no footing. The Greek forms were seen to be too severe and intractable for present requirements. About 1830, however, a modified style of design, known since as the *Néo-Grec*, was introduced by the exertions of a small coterie of talented architects; and though its own life was short, it profoundly influenced French art in the direction of freedom and refinement for a long time afterward. In Italy there was hardly anything in the nature of a true revival of either Roman or Greek forms. The few important works of the late eighteenth and early nineteenth centuries were conceived in the spirit of the late Renaissance, and took from the prevalent revival of classicism elsewhere merely a greater correctness of detail, not any radical change of form or spirit.

ENGLAND. In Great Britain the Palladian style of Wren and Gibbs and their successors continued until superseded by the Greek revival, but not without a distinct tendency toward classic Roman types. The **Royal Exchange** (1789, restored

1846)—and the **Mansion House** (1739 by *Dance*) in London are examples of design in the Roman spirit; and public buildings in other cities, notably in Dublin and Bath, show the same tendency. Little by little Greek models began to supersede the Roman. The first fruit of the new movement seems to have been the **Bank of England** at London, by *Sir John Soane* (1788). In this edifice the Greco-Roman order of the

FIG. 207.—BRITISH MUSEUM, LONDON.

round temple at Tivoli was closely copied, and applied to a long façade, too low for its length and with no sufficient stylobate, but fairly effective with its recessed colonnade and unpierced walls. The **British Museum,** nearly sixty years later, by *Robert Smirke* (Fig. 207), was a more ambitious essay in a more purely Greek style. Its colossal Ionic colonnade was, however, a mere frontispiece, applied to a badly planned and commonplace building, from which it cut off needed light. The more modest but appropriate columnar façade to the **Fitzwilliam Museum** at Cambridge, by *Basevi*, was a more success-

ful attempt in the same direction, better proportioned and avoiding the incongruity of modern windows in several stories; but it is quite as Roman as it is Greek. Windows have always been the stumbling-block of the revived Greek style. The difficulties they raise are avoided, however, in buildings presenting but two stories, the order being applied to the upper story, upon a high stylobate serving as a basement. The **High School** and the Royal Institution at Edinburgh, by *Hamilton*, are for this reason, if for no other, superior to the British Museum and other many-storied Anglo-Greek edifices.

FIG. 208.—ST. GEORGE'S HALL, LIVERPOOL.

In spite of all difficulties, however, the English extended the applications of the style with doubtful success not only to all manner of public buildings, but also to country residences. Carlton House, Bowden Park, and Grange House are instances of this misapplication of Greek forms. Neither did it prove more tractable for ecclesiastical purposes. **St. Pancras's** Church at London, and several churches by *Thomson* (1817–75), in Glasgow, though interesting as experiments in such adaptation, are not to be commended for imitation. The most successful of all British Greek designs is **St. George's Hall** at Liverpool (Fig. 208) by *Elmes* (1809–1846) whose imposing peristyle and porches are sufficiently Greek in spirit and detail to class it

among the works of the Greek Revival.* But its great hall and its interior composition are really Roman and not Greek, emphasizing the teaching of experience that Greek architecture does not lend itself to the exigencies of modern civilization to nearly the same extent as the Roman.

On the whole the most successful products of the Greek revival were minor works, especially sepulchral monuments. Among the best of these are two in Edinburgh, to the memory respectively of Robert Burns and Dugald Stewart, both inspired from the monument of Lysicrates (Fig. 38) though diverging widely from its detailed design.

GERMANY. During the eighteenth century the classic revival in Germany, which at first followed Roman precedents (as in the columns carved with spirally ascending reliefs in front of the church of **St. Charles Borromeo,** at Vienna, by *Fischer von Erlach*), was directed into the channel of Greek imitation by the literary works of Winckelmann, Lessing, Goethe, and others, as well as by the interest aroused by the discoveries of Stuart and Revett. The **Brandenburg Gate** at Berlin (1784 by *Langhans*) was the earliest realization in architecture of this revived Hellenism, and one of its most successful applications to civic purposes. Without precisely copying any Greek structure, it was evidently inspired from the Athenian Propylæa, and nothing in its purpose is foreign to the style employed. The greatest activity in the style came later, however, and was greatly stimulated by the achievements of *Fr. Schinkel* (1781–1841), one of the greatest of modern German architects. While in the domical church of St. Nicholas at Potsdam he employed Roman forms in a modernized Roman conception, and followed in one or two other buildings the principles of the Renaissance, his predilections were for Greek architecture. His masterpiece was the **Museum** at Berlin,

* The building was continued by *Rawlinson* and completed by *Cockerell* after Elmes' death.

with an imposing portico of 18 Ionic columns (Fig. 209). This building with its fine rotunda was excellently planned, and forms, in conjunction with the **New Museum** by *Stühler* (1843–55), a noble palace of art, to whose monumental requirements and artistic purpose the Greek colonnades and pediments were not inappropriate. Schinkel's greatest successor was *Leo von Klenze* (1784–1864), whose more textual reproductions of Greek models won him great favor and wide employment. The **Walhalla** near Ratisbon is a modernized Parthenon, internally vaulted with glass; in spite of its elegance, too obvious a plagiarism externally, and internally too un-Hellenic, to be greatly admired. The **Ruhmeshalle** at Munich, a double **L** partly enclosing a colossal statue of Bavaria, and devoted to the commemoration of Bavaria's great men, is copied from

FIG. 209.—THE OLD MUSEUM, BERLIN.

no Greek building, though purely Greek in design and correct to the smallest detail. In the **Glyptothek** (Sculpture Gallery), in the same city, the one distinctively Greek feature introduced by Klenze, an Ionic portico, is also the one inappropriate note in the design. The **Propylæa** at Munich, by the same (Fig. 210), and the **Court Theatre** at Berlin, by Schinkel, are other important examples of the style. Schinkel's genius was re-

markably successful in adapting Greek details to the exigent difficulties of theatre design, and there is in the last-named edifice no suggestion of copying any known Greek building.

In Vienna the one notable monument of the Classic Revival is the **Reichsrathsgebäude** or Parliament House, by *Th. Hansen* (1843), an imposing two-storied composition with a lofty

FIG. 210.—THE PROPYLÆA, MUNICH.

central colonnade and lower side-wings, harmonious in general proportions and pleasingly varied in outline and mass.

In general, the Greek Revival in Germany presents the aspect of a sincere striving after beauty, on the part of a limited number of artists of great talent, misled by the idea that the forms of a dead civilization could be galvanized into new life in the service of modern needs. The result was disappointing, in spite of the excellent planning, admirable construction and carefully studied detail of these buildings, and the movement here as elsewhere was foredoomed to failure.

FRANCE. The Greek revival took little hold of the Parisian imagination. Its forms were too cold, too precise and fixed, too intractable to modern requirements to appeal to the French

taste. It counts but one notable monument, the church of **St. Vincent de Paul,** by *Hittorff*, who sought to apply to this design the principles of Greek external polychromy; but the pictures and ornaments failed to withstand the Parisian climate, and were finally erased. The Néo-Grec movement already refered to, initiated by Duc, Duban, and Labrouste about 1830, aimed only to introduce into modern design the spirit and refinement, the purity and delicacy of Greek art, not its forms (Fig. 211). Its chief monuments were the remodeling, by *Duc*, of the **Palais de Justice,** of which the new west façade and the hall behind it are the most striking features; the beautiful **Library of the Ecole des Beaux-Arts,** by *Duban*; the Library of **Ste. Geneviève,** by *Labrouste*, in which a long façade is treated without a pilaster or column, simple arches over a massive basement forming the dominant motive, while in the interior a system of iron construction with glazed domes controls the design; and the commemorative **Colonne Juillet,** by Duc, the most elegant and appropriate of all modern memorial columns. All these buildings, begun

FIG. 211.—DOORWAY, ÉCOLE DES BEAUX-ARTS PARIS.

between 1830 and 1850 and completed at various dates, are distinguished by a remarkable purity and freedom of conception and detail, quite unfettered by the artificial trammels of the official academic style then prevalent.

THE CLASSIC REVIVAL ELSEWHERE. The other countries of Europe have little to show in the way of imitations of classic monuments or reproductions of Roman colonnades. In Italy the church of **S. Francesco di Paola,** at Naples, in quasi-imitation of the Pantheon at Rome, with wing-colonnades, and the **Superga,** at Turin (1706, by *Ivara*); the façade of the San Carlo Theatre, at Naples, and the Braccio Nuovo of the Vatican (1817, by *Stern*) are the monuments which come the nearest to the spirit and style of the Roman Revival. Yet in each of these there is a large element of originality and freedom of treatment.

A reflection of the Munich school is seen in the modern public buildings of Athens, designed in some cases by German architects, and in others by native Greeks. The **University,** the Museum buildings, the **Academy of Art and Science,** and other edifices exemplify fairly successful efforts to adapt the severe details of classic Greek art to modern windowed structures. They suffer somewhat from the too liberal use of stucco in place of marble, and from the conscious affectation of an extinct style. But they are for the most part pleasing and monumental designs, appropriate to their surroundings, and adding greatly to the beauty of the modern city.

In **RUSSIA,** during and after the reign of Peter the Great (1689–1725), there appeared a curious mixture of styles. A style analogous to the Jesuit in Italy and the Churrigueresque in Spain was generally prevalent, but it was in many cases modified by Muscovite traditions into nondescript forms like those of the later buildings of the **Kremlin,** at Moscow, or the less extravagant Citadel Church and Smolnoy Monastery at Petrograd. Along with this heavy and barbarous style, which

prevails generally in the numerous palaces of the capital, finished in stucco with atrocious details, a more severe and classical spirit is met with. The church of the **Greek Rite** at Petrograd combines a Roman domical interior with an exterior of the Greek Doric order. The Church of **Our Lady of Kazan** has a semicircular colonnade projecting from its transept, copying as nearly as may be the colonnades in front of St. Peter's. But the greatest classic monument in Russia is the **Cathedral of St. Isaac** (Fig. 212), at Petrograd, a vast rectangular edifice with four Roman Corinthian pedimental colonnades projecting from its faces, and a dome with a peristyle crowning the whole. Despite many defects of detail, and the use of cast iron for the dome, which pretends to be of marble, this is one of the most impressive churches of its size in Europe. Internally it displays the costliest materials in extraordinary profusion, while externally its noble colonnades go far to redeem its bare attic and the material of its dome. The **Palace of the Grand Duke Michael,** which reproduces, with improvements, Gabriel's colonnades of the Garde Meuble at Paris on its garden front, is a nobly planned and commendable design, agreeably contrasting with the debased architecture of many of the public buildings of the city. The Admiralty with its Doric pilasters, and the **New Museum,** by von Klenze of Munich, in a skilfully modified Greek style, with effective loggias, are the only other monuments of the

FIG. 212.—ST. ISAAC'S CATHEDRAL, PETROGRAD.

classic revival in Russia which can find mention in a brief sketch like this. Both are notable and in many respects admirable buildings, in part redeeming the vulgarity which is unfortunately so prevalent in the architecture of Petrograd.

MONUMENTS. The principal monuments of the Classic Revival have been referred to in the foregoing text, but the following, among others, are worthy of mention: Custom House, London, by *Laing*, 1813-17; College of Physicians and of Surgeons, London, by *Smirke* and *Barry*, 1825-35; University College, London, by *Wilkins;* Villa Greenough, Regent's Park, London; Library and Walker Art Gallery, Liverpool; Public Library, Manchester; Potsdamer Thor, Berlin, by *Schmidt;* Berlin Opera House, 1844, by *Langhans;* Old Public Library, Berlin.

CHAPTER XXVI

RECENT ARCHITECTURE IN EUROPE

BOOKS RECOMMENDED: As before, Château. Also, Barqui, *L'Architecture moderne en France.—Berlin und seine Bauten* (and a series of similar works on the modern buildings of other German cities). Boileau, *Les préludes de l'architecture du XXe siècle.* Chabat, *La brique et la terre cuite.* Daly, *Architecture privée du XIXe siècle.* Garnier, *Le nouvel Opéra.* Jackson, *Modern Gothic Architecture.* Jaffé, *Neubauten in Grossbritanien.* Lambert und Stahl, *Moderne Architektur.* Licht, *Architektur Deutschlands; Architektur der Gegenwart.* Lübke, *Denkmäler der Kunst.* Lützow und Tischler, *Wiener Neubauten.* Muthesius, *Die Neuere kirchliche Kunst in England.* Narjoux, *Monuments élevés par la ville de Paris, 1850-1880.* Rückwardt, *Façaden und Details moderner Bauten.—Sammelmappe hervorragenden Concurrenz-Entwürfen.* Sédille, *L'Architecture moderne.* Selfridge, *Modern French Architecture.* Statham, *Modern Architecture.* Consult also *Transactions of the Royal Institute of British Architects*, and the leading architectural journals of recent years.

MODERN CONDITIONS. The nineteenth century was an age of extraordinary progress along mechanical, scientific, and commercial lines. As a result, the material conditions of mankind in civilized countries have undoubtedly been greatly bettered. Popular education and the printing-press have also raised the intellectual level of society, making learning the privilege of even the poorest. Intellectual, scientific, and commercial pursuits have thus largely absorbed those energies which in other ages found exercise in the creation of artistic forms and objects. The modern critical and utilitarian spirit has tended to check the free and general development of the

creative imagination, at least in the plastic arts. While in poetry and music there has been high achievement, the plastic arts, including architecture, have only of late years attained a position at all worthy of the intellectual advancement of the times.

Nevertheless the artistic spirit has never been wholly crushed out by the untoward pressure of realism and commercialism. Unfortunately it has repeatedly been directed in wrong channels. Modern archæology and the publication of the forms of historic art by books and photographs have too exclusively fastened attention upon the details of extinct styles as a source of inspiration in design. The whole range of historic art is brought within our survey, and this has tended towards the multiplication of styles in modern work, and has sometimes led to a slavish adherence to historic precedent or a literal copying of historic forms. Modern architecture has thus oscillated between the extremes of archæological servitude and of an unreasoning eclecticism.

An important factor in this demoralization of architectural design has been the development of new constructive methods, especially in the use of iron and steel. It has been impossible for modern designers, in their treatment of style, to keep pace with the rapid changes in the structural use of metal in architecture. The roofs of vast span, largely composed of glass, which modern methods of trussing have made possible for railway stations, armories, and exhibition buildings; the immense unencumbered spaces which may be covered by them; the introduction and development, especially in the United States, of the post-and-girder system of construction for high buildings in which the external walls are a mere screen or filling-in; these have so rapidly revolutionized architecture that architects are still seeking the solution of many of the problems of style, scale, and composition which they have brought forward.

Within the last forty years, however, architecture has, despite these new conditions, made notable advances. The artistic emulation of repeated international exhibitions, the multiplication of museums and schools of art, the general advance in intelligence and enlightenment, have all contributed to this artistic progress. There appears to be more of the artistic and intellectual quality in the average architecture of the present time, on both sides of the Atlantic, than ever before since the beginning of the nineteenth century. The futility of the archæological revival of extinct styles is generally recognized. New conditions are gradually procuring the solution of the very problems they raise. Historic precedent sits more lightly on the architect than formerly, and the essential unity of principle underlying all good design is coming to be better understood.

The upheaval of the World War, which destroyed precious monuments and put an almost complete stop to architectural activity on both sides of the Atlantic, has not yet subsided. It will require long years to restore normal conditions the world over, and no one can forecast its ultimate influence on architecture.

FRANCE. It is in France, Germany (including Austria), and England that architectural progress in Europe since 1850 has been most marked. We have already noticed the results of the classic revivals in these three countries. Speaking broadly, it may be said that in France the *Ecole des Beaux-Arts* has tended to give unity and consistency to the national architecture, and has exerted a powerful influence in behalf of refinement of taste and correctness of style. French architecture has generally until recent years adhered to the principles of the Renaissance, though the style has been modified by various influences. The first of these was the Néo-Grec movement, alluded to in the last chapter, which broke the grip of Roman tradition in matters of detail and gave greater elasticity

to the national style. Next should be mentioned the Gothic movement represented by Viollet-le-Duc, Lassus, Ballu, and their followers. Beginning about 1845, it produced comparatively few notable buildings, but gave a great impulse to the study of mediæval archæology and the restoration of mediæval monuments. The churches of Ste. Clothilde and of St. Jean de Belleville at Paris, the Bonsecours Church near Rouen, and the reconstruction of the Château de Pierrefonds, were among its direct results. Indirectly it led to a freer and more rational

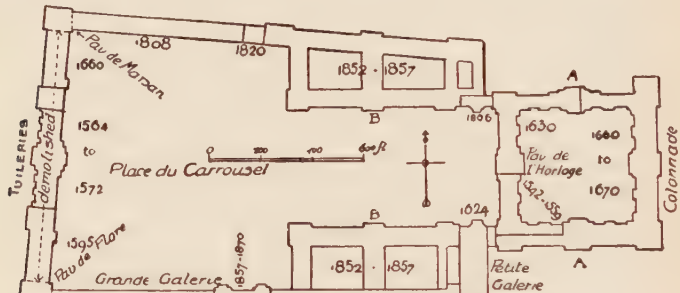

FIG. 213.—PLAN OF LOUVRE AND TUILERIES, PARIS.

A, A, the Old Louvre, so called; B, B, the New Louvre.

treatment of structural forms and materials than had prevailed with the academic designers. The church of **St. Augustin,** by *Baltard,* at Paris, illustrates this in its use of iron and brick for the dome and vaulting, and the **Collège Chaptal,** by *E. Train,* in its decorative treatment of brick and tile externally. The general adoption of iron for roof-trusses and for the construction of markets and similar buildings tended further in the same direction, the **Halles Centrales** at Paris, by *Baltard* (1846), being an early example; the newer railway stations and the **Grand Palais** (1900) in the same city exhibiting the later development. The French have long led the world in the artistic handling of construction in metal.

THE SECOND EMPIRE. The reign of Napoleon III (1852–70) was a period of exceptional activity, especially in Paris. The greatest monument of his reign was the completion of the **Louvre** and **Tuileries,** under *Visconti* and *Lefuel,* including the remodeling of the pavilions de Flore and de Marsan. The new portions constitute the most notable example of modern French architecture, and the manner in which the two palaces were united deserves high praise. In spite of certain defects, this work is marked by a combination of dignity, richness and refinement such as is rarely found in palace architecture (Figs. 213, 214). The **New Opera** (1863–75), by *Garnier* (d. 1898), stands next to the Louvre in importance as a national monument. It is by far the most sumptuous building for amusement in existence, but in purity of detail and in the balance and restraint of its design it is inferior to the work of Visconti and Lefuel (Fig. 215).

FIG. 214.—PAVILION OF RICHELIEU, LOUVRE.

To this reign belong the Palais de l'Industrie, by *Viel,* built for the exhibition of 1855, but demolished for that of 1900, and several great railway stations (Gare du Nord, by *Hittorff,* Gare de l'Est, etc.), in which the modern French version of the Renaissance was applied with considerable skill to buildings largely constructed of iron and glass. Town halls and

theatres were erected in great numbers, and in decorative works like fountains and monuments the French were particularly successful. The fountains of **St. Michel,** Cuvier and Molière, at Paris, and of **Longchamps,** at Marseilles (Fig. 216), illustrate the fertility of resource and elegance of detailed treatment of the French in this department. Mention should also here be made of the extensive enterprises carried out by or under Napoleon III, in rectifying and embellishing the street-plans of Paris and other cities by new avenues and squares on a vast scale, adding greatly to the monumental splendor of these cities.

FIG. 215.—GRAND STAIRCASE OF THE OPÉRA, PARIS.

THE REPUBLIC. Since the fall of the Second Empire in 1870, French architecture has shown a remarkable vitality and flexibility under new conditions. Its productions have in general been marked by a refined taste and a conspicuous absence of eccentricity and excess; it has for the most part trodden in well-worn paths. Among notable recent monuments are, in church architecture, the **Sacré-Coeur,** at Montmartre, by *Abadie* and

Magne, a votive church inspired from the Franco-Byzantine style of Aquitania; in civil architecture the new **Hôtel de Ville,** at Paris, by *Ballu* and *Déperthes*, recalling the original structure destroyed by the Commune, but in reality an original creation of great merit; in scholastic architecture the new École de Médecine, and the new **Sorbonne,** by *Nénot*;

FIG. 216.—FOUNTAIN OF LONGCHAMPS, MARSEILLES.

and in other branches of the art the great concert-hall and museum of the **Trocadéro,** by *Davioud*, and the metal-and-glass exhibition buildings of 1878, 1889, and 1900. In the last of these the striving for originality and the effort to discard traditional forms reached the extreme, although accompanied by much very clever detail and a masterly use of color decoration. To these should be added many noteworthy theatres, town-halls, court-houses, and *préfectures* in provincial cities, and

commemorative columns and monuments almost without number. In street architecture there is now much more variety and originality than formerly, especially in private houses, and the reaction against the orders and against traditional methods of design has of late been growing stronger. The chief excellence of modern French architecture lies in its rational planning, monumental spirit, and refinement of detail (Fig. 217), and in the intimate association of decorative sculpture and painting with structural design.

GERMANY, AUSTRIA AND HUNGARY. German architecture has been more affected during the past sixty years by the archæological spirit than has the French. A pronounced mediæval revival partly accompanied, partly followed the Greek revival in Germany, and produced a number of churches and a few secular buildings in the basilican, Romanesque, and Gothic styles. These are less interesting than those in the Greek style, because mediæval forms are even more foreign to modern needs than the classic, being specially appropriate only to systems of design and construction which are no longer practicable. At Munich, the Auekirche, by *Ohlmüller*, in an attenuated Gothic style; the Byzantine Ludwigskirche, and *Ziebland's* Basilica following Early Christian models; the Basilica by *Hübsch* at Bulach, and the Votive Church at Vienna (1856) by *H. von Ferstel* (1828–1883) are notable neo-mediæval monuments. The last-named church may be classed with Ste. Clothilde at Paris (see p. 388), and St. Patrick's

FIG. 217.—MUSÉE GALLIÉRA, PARIS.

Cathedral at New York, all three being of approximately the same size and general style, recalling St. Ouen at Rouen. They are correct and elaborate, but more or less cold and artificial.

More successful are many of the German theatres and concert halls, in which Renaissance and classic forms have been

FIG. 218.—THEATRE AT DRESDEN.
(Original form.)

freely used. In several of these the attempt has been made to express by the external form the curvilinear plan of the auditorium, as in the **Dresden Theatre,** by *Semper* (1841; Fig. 218), the theatre at Carlsruhe, by Hübsch, and the double winter-summer **Victoria Theatre,** at Berlin, by *Titz.* But the practical and æsthetic difficulties involved in this treatment have caused its general abandonment. The **Opera House** at Vienna, by *Siccardsburg* and *Von der Nüll* (1861–69), is rectangular in its masses, and but for a certain triviality of detail would rank among the most successful buildings of its kind. The new **Burgtheater** in the same city is a more elaborately ornate structure in Renaissance style, somewhat florid and overdone.

Modern German architecture is at its best in academic and residential buildings. The **Industrial Museum,** at Berlin, by

Schinkel, in which brick is used in a rational and dignified design without the orders; the Polytechnic School, at Zurich, by Semper; university buildings, and especially buildings for technical instruction, at Carlsruhe, Stuttgart, Strasburg, Dresden, Leipzig, Vienna, and other cities, show a monumental treatment of the exterior and of the general distribution, combined with a careful study of practical requirements. In administrative buildings the Germans have hardly been as successful; and the **Parliament House,** at Berlin, by *P. Wallot,* in spite of its splendor and costliness, is heavy and unsatisfactory in detail. The larger cities, especially Berlin, contain many excellent examples of house architecture, mostly in the Renaissance style, sufficiently monumental in design, though usually, like most German work, inclined to heaviness of detail. The too free use of stucco in imitation of stone is also open to criticism.

VIENNA. Late in the last century Vienna underwent a transformation which made it the rival of Paris as a stately capital. The remodeling of the central portion, the creation of a series of magnificent boulevards and squares, and the grouping of the chief state and municipal buildings about these upon a monumental scheme of arrangement, have given the city an unusual aspect of splendor. Among the most important monuments in this group are the **Parliament House,** by Hansen (see p. 380), and the **Town Hall,** by *F. Schmidt.* This latter is a Neo-Gothic edifice of great size and pretentiousness, but strangely thin and meagre in detail, and quite out of harmony with its surroundings. The university and museums are massive piles in Renaissance style; and it is the Renaissance rather than the classic or Gothic revival which prevails throughout the new city. The great blocks of residences and apartments (Fig. 219), which line its streets are highly ornate in their architecture, but for the most part done in stucco, which fails after all to give the aspect of solidity and durability which it seeks to counterfeit.

The city of **Buda-Pesth,** the capital of Hungary, possesses fewer monuments of conspicuous architectural interest. The **Synagogue** is a rich and pleasing edifice of brick in a modified Hispano-Moresque style.

Its most notable monument, and one of the most imposing of modern legislative buildings in Europe, is the neo-Gothic **Parliament House** by *Steindl*, which by its more massive design, offers a striking contrast to the Vienna Town Hall mentioned above.

FIG. 219.—BLOCK OF DWELLINGS (ZIERERHOF), VIENNA.

GREAT BRITAIN. While the Anglo-Greek style was still in process of development, a coterie of enthusiastic students of British mediæval monuments—archæologists rather than architects—initiated a movement for the revival of the national

Gothic architecture.* The first fruits of this movement, led by the two Pugins, Brandon, Rickman, and others (about 1825–40) were seen in countless pseudo-Gothic structures in which the pointed arches, buttresses, and clustered shafts of mediæval architecture were imitated or parodied according to the designer's ability, with frequent misapprehension of their

FIG. 220.—HOUSES OF PARLIAMENT, WESTMINSTER, LONDON.

proper use or significance. With increasing light and experience came a more correct and consistent use of the mediæval styles, dominated by a spirit of archæological correctness. This spirit, stimulated by extensive enterprises in the restoration of the great mediæval monuments of the United Kingdom, was fatal to any free and original development of the style

* There had, indeed, been an earlier effort to revive the Gothic style in the famous Strawberry Hill mansion of Walpole in the later years of the 18th century, and again in Beckford's unlucky experiment of "Fonthill Abbey"; but these were individual and abortive efforts.

along new lines. But it rescued church architecture from the utter meanness and debasement into which it had fallen and established standards of taste which reacted on all other branches of design.

THE VICTORIAN GOTHIC. Between 1850 and 1870 the striving after archæological correctness gave place to the more rational effort to adapt Gothic principles to modern requirements, instead of merely copying extinct styles. This effort, prosecuted by a number of architects of great intelligence, culture, and earnestness (Sir Gilbert Scott, George Edmund Street, Alfred Waterhouse, William Burges, and others), resulted in a number of extremely interesting buildings. Chief among these in size and cost stand the **Parliament Houses** at Westminster, begun in 1839 by *Sir Charles Barry* (1789–1850), in the Perpendicular style. This immense structure (Fig. 220), imposing in its simple masses and refined in its carefully studied detail, is the most successful monument of the Victorian Gothic style. It suffers, however, from a confused plan, and from the over-minuteness of its decorative detail. It cannot be

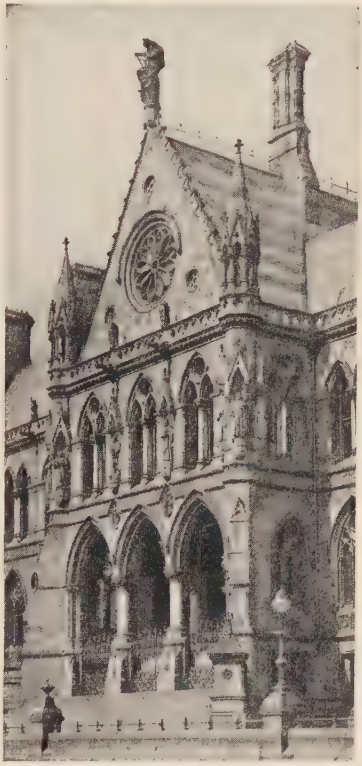

FIG. 221.—ASSIZE COURTS, MANCHESTER. DETAIL.

claimed as a successful vindication of the adaptability of Gothic forms to structures planned and built after the modern fashion. The **Assize Courts** at Manchester (Fig. 221), the **New Museum** at Oxford, the gorgeous **Albert Memorial,** at London, by *Scott*, and the **Law Courts** at London, by *Street*, are all conspicuous illustrations of the same truth. They are conscientious, carefully studied designs in good taste, and yet generally unsuited in style to their purpose. They are like labored and scholarly verse in a foreign tongue, correct in form and language, but lacking the naturalness and charm of true and unfettered inspiration. A later essay of the same sort in a slightly different field is the **Natural History Museum** at South Kensington, by *Waterhouse* (1879), an imposing building in a modified Romanesque style (Fig. 222).

FIG. 222.—NATURAL HISTORY MUSEUM, LONDON

The church architecture which has been really the first product of this movement since 1880 is by contrast with these secular buildings, worthy of high praise. It is characterized by almost unfailing good taste, and by a dignity and simplicity

of design and appropriateness of detail which can hardly be matched elsewhere in modern ecclesiastical work. The examples are too numerous to be individualized by special mention in so brief a notice.

OTHER WORKS. The Victorian-Gothic style responded to no deep and general movement of the popular taste, and, like the Anglo-Greek style, was doomed to failure from the inherent incongruity between modern needs and mediæval forms. Within the last thirty years there has been a quite general return to Renaissance principles, and the result is seen in a large number of town-halls, exchanges, museums, and colleges, in which Renaissance forms, with and without the orders, have been treated with increasing freedom of adaptation in each case. The **Imperial Institute** (Colonial offices), by Collcutt, the Oxford Town Hall and the new **Victoria and Albert Museum** at South Kensington, by Sir Aston Webb, the more recent Government Offices and the **County Council Building,** all at London, are examples. In domestic architecture the so-called "Queen Anne" style as practised by Norman Shaw, Ernest George, and others, was for a while in vogue, and many large mansions, as well as many schools and colleges, have been erected in a free version of the Tudor-Gothic with distinct success. But it is in the smaller houses of villages and city suburbs that the English architects have in recent years shown the most distinctive talent, and nowhere, unless occasionally in the United States, are there to be seen such charming examples of simple, appropriate, unostentatious design as in these modest English houses of brick, timber and tile.

In its emancipation from the mistaken principles of archæological revivals, and in its evidences of improved taste and awakened originality, contemporary British architecture shows promise of good things to come. It is still inferior to the French in the monumental quality, in technical resource and refinement of decorative detail, but superior to it in

picturesqueness and variety, especially of external mass and effect.

ELSEWHERE IN EUROPE. In other European countries recent architecture shows in general increasing freedom and improved taste, but both its opportunities and its performance have been nowhere else as conspicuous as in France, Germany, and England. The costly Bourse and the vast but overloaded Palais de Justice at Brussels, by *Polaert*, are neither of them conspicuous for refinement of detail. A few buildings of note in Switzerland, Russia, and Greece might find mention in a more extended review of architecture, but cannot here even be enumerated. In Italy, especially at Rome, Milan, Naples, and Turin, there has been a great activity in building since 1870, but with the exception of the **Monument to Victor Emmanuel,** the National Museum and the over-ornate **Palace of Justice** at Rome, monumental arcades and passages at Milan and Naples, and *Campi Santi* or monumental cemeteries at Bologna, Genoa, and one or two other places, there has been comparatively little of real importance built in Italy of late years.

L'ART NOUVEAU. In the later years of the last century a movement began to manifest itself in France and Belgium, and spread to Germany and Austria and even measurably to England, looking toward a more personal and original style of decorative and architectural design, in which the traditions and historic styles of the past should be ignored. This movement, commonly called "L'Art Nouveau," can hardly be held to have created a really new style except in the minor arts. It is a reaction against a too slavish adherence to traditional forms and methods of design (see pp. 374, 399), rather than a reaching out after any well-understood, positive end; as such, it possesses the negative strength of protest rather than the affirmative strength of a vital principle. Its lack of cohesion is seen in the division of its adherents into groups, some

looking to nature for inspiration, while others decry this as a mistaken quest; some seeking to emphasize structural lines, and others to ignore them altogether. All, however, are united in the avoidance of commonplace forms and historic styles, and this preoccupation has developed an amazing amount of originality and individualism of style, frequently reaching the extreme of eccentricity. The results have therefore been, as might be expected, extremely varied in merit, ranging from the most refined and reserved in style to the most harshly bizarre and extravagant. As a rule, they have been most successful in small objects—jewelry, silverware, vases and small furniture; and one most desirable feature of the movement has been the stimulus it has given (especially in France and England), to the organization and activity of "arts-and-crafts" societies, which occupy themselves with the encouragement of the decorative and industrial arts and the diffusion of an improved taste. In the field of the larger objects of design, in which the dominance of traditional form and of structural considerations is proportionally more imperious, the struggle to evade these restrictions becomes more difficult and results usually in obvious and disagreeable eccentricities. The least successful achievements of the movement have accordingly been in architecture. The buildings designed by its most fervent disciples are for the most part characterized by extreme stiffness, eccentricity, or ugliness. The requirements of construction and of life cannot easily be met without sometimes using the forms which past experience has developed for the same ends; and the negation of precedent is not the surest path to beauty or even reasonableness of design. The movement may well be compared with that of the reign of Louis XV which was a protest against the formalism of the heavy classic architecture of preceding reigns, and achieved its highest successes in the domain of furniture and interior decoration.

It may be fair to credit the new movement with one positive characteristic in its prevalent regard for line, especially for the effect of long and swaying lines, whether in the contours or ornamentation of an object. This is especially noticeable in the Belgian work, and in that of the Viennese "Secessionists," who have, however, carried eccentricity to a further point of extravagance than any others.

The search for novelty and the desire to dispense wholly with historic forms of design which are the chief marks of the Art Nouveau, were emphatically displayed in many of the remarkable buildings of the Paris **Exhibition of** 1900, in which a striking fertility and facility of design in the decorative details made more conspicuous the failure to improve upon the established precedents of architectural style in the matters of proportion, scale, general composition, and contour. As usual the metallic construction of these buildings was almost without exception admirable, and the decorative details, taken by themselves, extremely clever and often beautiful, but the combined result was not wholly satisfactory.

On the whole, although hardly constituting in itself a definite style, the movement has exerted on European architecture an influence, direct and indirect, not unlike that of the Néo-Grec movement of 1830 in France (p. 381), but even more lasting and beneficial. It has already begun to break the hold of rigid classical tradition in design; and recent buildings, especially in Germany and Austria, like the brilliant works of the late *Otto Wagner* in Vienna, show a pleasing freedom of personal touch without undue striving after eccentric novelty. Doubtless in French and other European architecture the same result will in time manifest itself.

In the United States the movement has not found a firm foothold because there has been no dominant, enslaving tradition to protest against. The fundamental spirit of the movement may be recognized in the work of individual architects

and decorative artists in the United States, executed years before the movement took recognizable form in Europe; and American decorative design has generally been, at least since 1880 or 1885, sufficiently free, individual and personal, to render unnecessary any such concerted movement of artistic revolt.

CHAPTER XXVII

ARCHITECTURE IN THE UNITED STATES

BOOKS RECOMMENDED: As before, Fergusson, Statham. Also, Baker, *American Country Homes and Their Gardens.* Glenn Brown, *History of the United States Capitol.* Dow, *The American Renaissance.* Eberlein, *Colonial Architecture in America.* Everett, *Historic Churches of America. The Georgian ("Colonial") Period.** Hamlin, T. F., *The American Spirit in Architecture,* Vol. XIII of *The Pageant of America.* Kimball, *Thomas Jefferson; Colonial Architecture; Domestic Architecture of the American Colonies and of the Early Republic; Monographs of American Architecture.** Schuyler, *American Architecture.* Major, Howard, *The Dome Architecture of the Early Republic: The Revival.* Stevens and Cobb, *Examples of American Domestic Architecture.* Van Rensselaer, *H. H. Richardson and His Works.* Vogel, *Das Amerikanische Haus.* Wallis, *Old Colonial Architecture and Furniture.* Numerous books illustrating "Colonial" architecture by Campbell, Chandler, Cleaveland, Cozzens, Crane, Soderholz and others.

GENERAL REMARKS. The colonial architecture of modern times presents a peculiar phenomenon. The colonizing nation, carrying into its new *habitat* the tastes and practices of a long-established civilization, modifies these only with the utmost reluctance, under the absolute compulsion of new conditions. When the new home is virgin soil, destitute of cultivation, government, or civilized inhabitants, the accompaniments and activities of civilization introduced by the colonists manifest themselves at first in curious contrast to the primitive surroundings. The struggle between organized life and chaos, the laborious subjugation of nature to the requirements of our

* Published by the *American Architect and Building News.*

complex modern life, for a considerable period absorb the energies of the colonists. The amenities of culture can, during this period, receive little attention. Meanwhile a new national character is being formed; the people are undergoing the moral training upon which their subsequent achievements must depend. With the conquest of brute nature, however, and the gradual emergence of a more cultivated class, with the growth of commerce and wealth and the consequent increase of leisure, the humanities find more place in the colonial life. The fine arts appear in scattered centres determined by peculiarly favorable conditions. For a long time they retain the impress, and seek to reproduce the forms, of the art of the mother country. But new conditions impose a new development. Maturing commerce with other lands brings in foreign influences, to which the still unformed colonial art is peculiarly susceptible. Only with political and commercial independence, fully developed internal resources, and a high national culture do the arts finally attain, as it were, their majority, and enter upon a truly national growth.

These facts are abundantly illustrated by the architectural history of the United States. The only one among the British colonies to attain complete political independence, it is the only one among them whose architecture has as yet entered upon an independent course of development, and this only within a comparatively recent period. Nor has even this development produced as yet a wholly independent national style. It has, however, originated new constructive methods, new types of buildings, and a distinctively American treatment of the composition and the masses in many classes of buildings, the decorative details being still, for the most part, derived from historic precedents. The architecture of the other British colonies has retained more of the provincial character, though producing from time to time individual works of merit. In South America and Mexico the older buildings are almost

purely Spanish in style, while those of more recent date reflect the influence of modern European architecture modified by the prevailing Spanish taste. The following sketch of American architecture refers, therefore, exclusively to its development in the United States.

FORMATIVE PERIOD. Buildings in stone were not undertaken by the early English colonists. The more important structures in the Southern and Dutch colonies were of brick. Wood was, however, the material most commonly employed, especially in New England, and its use determined in large measure the form and style of the colonial architecture. There was little or no striving for architectural elegance until the eighteenth century, when Wren's influence asserted itself in a modest way in the Middle and Southern colonies. The very simple and unpretentious town-hall at Williamsburg, Va., and St. Michael's, Charleston, are attributed to him; but the most that can be said for these, as for the brick churches and manors of Virginia previous to 1725, is that they are simple in design and pleasing in proportion, without special architectural elegance. The same is true of the wooden houses and churches of New England of the period, except that they are even simpler in design.

From 1725 to 1775 increased population and wealth along the coast brought about a great advance in architecture, especially in churches and in the dwellings of the wealthy. During this period, sometimes called the Georgian, was developed the *Colonial* style, based on that of the reigns of Anne and the first two Georges in England, and in church architecture on the models set by Wren and Gibbs. All the details were, however, freely modified by the general employment of wood. The scarcity of architects trained in Old World traditions contributed to this departure from classic precision of form. The style, especially in interior design, reflected the cultured taste of the colonial aristocracy in its refined treatment of the wood-

work, much of which appears to have been imported from England. But there was little or no architecture of a truly monumental character. Edifices of stone were singularly few, and administrative buildings were small and modest, owing to insufficient grants from the Crown, as well as to the poverty of the colonies.

The churches of this period include a number of interesting designs, especially pleasing in the forms of their steeples. The **"Old South"** at Boston (1729, now a museum), Trinity at Newport, the First Baptist Church at Providence, R. I., and **St. Paul's** at New York —one of the few built of stone (1764)—are good examples of the style. **Christ Church** at Philadelphia (1727–35, by Dr. Kearsley) is another example, historically as well as architecturally interesting (Fig. 223); and there are scores of other churches almost equally noteworthy, scattered through New England, Maryland, Virginia, and the Middle States.

FIG. 223.—CHRIST CHURCH, PHILADELPHIA.

DWELLINGS. These reflect better than the churches the varying tastes of the different colonies. Maryland and Virginia abound in fine brick manor-houses, set amid extensive grounds walled in and entered through iron gates of artistic design. The interior finish of these houses was often elaborate in conception and admirably executed. Westover (1737), Carter's

Grove (1737) in Virginia, and the Harwood and Chase Houses at Annapolis, Md. (1770), are examples. The majority of the New England houses were of wood, more compact in plan, more varied and picturesque in design than those of the South, but wanting somewhat of their stateliness. The interior finish of wainscot, cornices, stairs, and mantlepeces shows, however,

FIG. 224.—CRAIGIE (LONGFELLOW) HOUSE, CAMBRIDGE.

the same general style, in a skilful and artistic adaptation of classic forms to the slender proportions of wood construction. Externally the orders appear in porches and in colossal pilasters, with well designed entablatures, and windows of Italian model. The influence of the Adam style in England is doubtless to be seen in these quaint and often charming versions of classic motives. The Hancock House, Boston (of stone, demolished); the Sherburne (or Warner) House, Portsmouth (1714); Craigie House, Cambridge (1757, Fig. 224); and Rumford House, North Woburn (Mass', 1790), are typical examples. The roofs were generally either gambreled or hipped; in the latter case

the central portion was nearly flat and was balustraded. Many of the doorways show notable elegance and refinement of design. Portsmouth (N. H.) and Salem (Mass.) are especially rich in examples of the style.

In the Middle States architectural activity was chiefly centred in Philadelphia and New York, and one or two other towns, where a number of manor-houses, still extant, attest the wealth and taste of the time. It is noticeable that the veranda or piazza was common in Southern States, but that the climate seems to have had little influence on the forms of roofs, except that the gambrel roof is seldom seen south of Pennsylvania.

PUBLIC BUILDINGS. Of public and monumental architecture this period has little to show. Large cities did not exist; New York, Boston and Philadelphia were hardly more than overgrown villages. The public buildings—court-houses and town-halls—were modest and inexpensive structures. The Old State House (1748) and Faneuil Hall at Boston (1763 by *P. Smibert*), the Town Hall at Newport, (R. I.), and **Independence Hall** at Philadelphia (1739, by *Hamilton*) the best known of those now extant, are architecturally unpretentious. Monumental design was beyond the opportunities and means of the colonies. It was in their churches, all of moderate size, and in their dwellings that the colonial builders achieved their greatest successes; and these works are quaint, charming, and refined, rather than impressive or imposing.

To the latter part of the colonial period belong a number of interesting buildings which remain as monuments of Spanish rule in California, Florida, and the Southwest. The old Fort San Marco, now Fort Marion (1656–1756), and the Catholic cathedral (1793; after the fire of 1887 rebuilt in its original form with the original façade uninjured), both at St. Augustine, Fla.; the picturesque buildings of the California missions (mainly 1769–1800), the majority of them now in ruins; scattered Span-

ish churches in California, Arizona, and New Mexico, and a few unimportant secular buildings, display among their modern and American settings a picturesque and interesting Spanish aspect and character, though from the point of view of architectural detail they represent merely a chastened phase of the Churrigueresque style.

FIG. 225.—NATIONAL CAPITOL, WASHINGTON.

EARLY REPUBLICAN PERIOD. Between the Revolution and the War of 1812, under the new conditions of independence and self-government, architecture took on a more monumental character. Buildings for the State and National administrations were erected with the rapidly increasing resources of the country. Stone was more generally used; colonnades, domes, and cupolas or bell-towers, were adopted as indispensable features of civic architecture. In church building the Wren-Gibbs type continued to prevail, but with greater correctness of classic forms. A number of excellent examples of these churches, the work of the Connecticut architects, *Ithiel Town* and *Isaac Damon*, are to be seen in Hartford and New Haven, and other towns in the Connecticut valley. The gambrel roof

tended to disappear from the houses of this period, and there was some decline in the refinement and delicacy of the details of architecture. The influence of the Louis XVI style is traceable in many cases, as in the New York City Hall (1803–12, by *McComb* and *Mangin*), one of the very best designs of the time, and in the delicate stucco-work and interior finish of many houses. The original **Capitol** at Washington—the central portion of the present edifice — by *Thornton*, *Hallet*, and *B. H. Latrobe* (1793–1830; Fig. 225), the **State Houses** at Boston (1795), Annapolis, (*Bulfinch*) and Hartford (1812), the Virginia State House at Richmond, and the **University of Virginia,** at Charlottesville, by *Thomas Jefferson* (1817) are the most interesting examples of the classic tendencies of this period.

FIG. 226.—THE OLD CUSTOM HOUSE, NEW YORK*

THE CLASSIC REVIVAL. The influence of the classic revivals of Europe began to appear before the close of this period and reached its culmination about 1830–40. It left its impress most strongly on our Federal architecture and the governmental buildings of the States and cities, although it also invaded domestic architecture, producing countless imitations,

* Remodelled for the National City Bank in 1908 by the addition of two stories in a superposed Corinthian order.

in brick and wooden houses, of Grecian colonnades and porticos. One of its first-fruits was the White House, or Executive Mansion, at Washington, by *Hoban* (1792), recalling the large English country houses of the time. The Greek Revival, a reflection of the movement in England, began to displace the Roman types as early as about 1820, and thereafter continued for nearly 30 years to dominate the public architecture of the country. The **Treasury** and **Patent Office** buildings at Washington, the **Sub-Treasury** at New York, and the Boston **Customs House,** all four by *Robert Mills* (1781–1855), and the **Old Customs House** at New York (erected originally for the Merchants' Exchange in 1841 by *I. Rogers;* Fig. 226), are among the important Federal buildings of this period. Several State capitols were also erected under the same influence; and the Marine Exchange by *Strickland*, and **Girard College** at Philadelphia (1847 by *T. U. Walter*) should also be mentioned as conspicuous examples of the pseudo-Greek style. The last named building is in form a Corinthian Greco-Roman temple, although too palpably an imitation imperfectly adapted to its modern functions, to be claimed as wholly successful. These classic buildings were solidly and carefully constructed, but lacked the freedom and appropriateness of earlier buildings and the sculpture demanded by their classic design. The Capitol at Washington was during this period greatly enlarged by *Walter*, who added the present terminal wings with fine Corinthian porticos, of Roman rather than Greek design. The **Dome,** also by *Walter*, was not added until 1858–63; it is a successful and harmonious composition, nobly completing the building. Unfortunately, it is an afterthought, built of iron painted to simulate marble, the substructure being inadequate to support a dome of masonry.

It is, however, worthy of remark that the Greek Revival produced on the whole more satisfactory results in the United States than either in England or Germany. The churches,

town-halls, State capitols and customs houses erected during this period are marked by excellent proportions and quiet and refined detail; the windows are treated with frankness and yet with true appreciation of the spirit of Greek architecture; and even in the wooden houses the mouldings are well profiled and the details designed with excellent taste.

THE WAR PERIOD. The period from 1850 to 1876 was one of intense political activity and rapid industrial progress. The former culminated in the terrible upheaval of the civil war; the latter in the completion of the Pacific Railroad (1869) and a remarkable development of the mining resources and manufactures of the country. It was a period of feverish commercial activity, but of artistic stagnation, and witnessed the erection of but few buildings of architectural importance. A number of State capitols, city halls and churches, of considerable size and cost but of inferior design, attest the decline of public taste and architectural skill during these years. The huge City Hall at Philadelphia and the Capitol at Albany are full of errors of planning and detail which twenty-five years of elaboration have failed to correct. Next to the dome of the Capitol at Washington, completed during this period, of which it is the most signal architectural achievement, its most notable monument is the **St. Patrick's Cathedral** at New York, by *Renwick;* a Gothic church which, if somewhat cold and mechanical in detail, is a stately and well-considered design. Its west front and spires (completed 1887) are particularly successful. Trinity Church (1843, by *R. Upjohn*) and Grace Church (1858, by *Renwick*), though of earlier date, should be classed with this cathedral as worthy examples of modern Gothic design. Indeed, the churches designed in this style by a few thoroughly trained architects during this period are the most creditable and worthy among its lesser productions. In general an undiscriminating eclecticism of style prevailed, and historic forms were sadly travestied. The Federal build-

ings by *Mullett* were monuments of uninspired and mechanical design based on French Renaissance motives. The New York and Boston Post Offices and the State, Army and Navy Department building at Washington are examples of this style.

THE ARTISTIC AWAKENING. Between 1870 and 1880 a remarkable series of events exercised a powerful influence on the artistic life of the United States. Two terrible conflagrations, in Chicago (1871) and Boston (1872), gave unexampled opportunities for architectural improvement and greatly stimulated the public interest in the art. The feverish and abnormal industrial activity which followed the war and the rapid growth of the parvenu spirit were checked by the disastrous "panic" of 1873. With the completion of the Pacific railways and the settlement of new communities in the West, industrial prosperity, when it returned, was established on a firmer basis. An extraordinary expansion of travel to Europe began to disseminate the seeds of artistic culture throughout the country. The successful establishment of schools of architecture in Boston (1866) and other cities, and the opening or enlargement of art museums in New York, Boston, Philadelphia, Baltimore, Detroit, Milwaukee, and elsewhere, stimulated the artistic awakening which now manifested itself. In architecture the personal influence of two men, trained in the Paris Ecole des Beaux-Arts, was especially felt—of *R. M. Hunt* (1828–95) through his words and deeds quite as much as through his works; and of *H. H. Richardson* (1838–86) predominantly through his works. These two men, with others of less fame but of high ideals and thorough culture, did much to elevate architecture as an art in the public esteem. Mention must also be made of the strong personal influence of *W. R. Ware*, through the training, in the two architectural schools of which he was the organizer in Boston and New York, of many gifted pupils who have since achieved high reputation in the profession. To all these influences new force was added by the

Centennial Exhibition at Philadelphia (1876). Here for the first time the American people were brought into contact, in their own land, with the products of European and Oriental art. It was to them an artistic revelation, whose results were prompt and far-reaching. Beginning first in the domain of industrial and decorative art, its stimulating influence rapidly extended to painting and architecture, and with permanent consequences. American students began to throng the centres of Old World art, while the setting of higher standards of artistic excellence at home, and the development of important art-industries, were other fruits of this artistic awakening. The Columbian Exhibition at Chicago in 1893, added a new impulse to the movement, especially in architecture.

STYLE IN RECENT ARCHITECTURE. The rapid increase in the number of American architects trained in, or under the influence of, the Ecole des Beaux-Arts has by no means imposed the French academic formulæ upon American architecture. The conditions, materials, and constructive processes here prevailing, and above all the eclecticism of the public taste, have prevented this. The French influence is perceived rather in a growing appreciation of monumental design in the planning, composition, and setting of buildings, than in any direct imitation of French models. The Gothic revival which prevailed more or less widely from 1840 to 1875, as already noticed, and of which, in secular architecture, the **State Capitol** at Hartford (Conn.), by *R. M. Upjohn*, and several other buildings since demolished were interesting examples, was generally confined to church architecture, for which Gothic forms are still largely employed, as in the Protestant cathedrals now building at Albany, N. Y. (by *R. W. Gibson*), at Washington (by the late *Bodley* of London, and *Vaughan* of New York), and of **St. John the Divine** at New York (by *Heins* and *Lafarge* and *R. A. Cram*). For the most part the works of the last twenty years show a more or less judicious

electicism, the choice of style being determined partly by the person and training of the designer, partly by the nature of the building. The powerfully conceived works of Richardson, in a free version of the French Romanesque, for a time exercised a wide influence, especially among the younger architects. **Trinity Church,** Boston (Fig. 227), his earliest important work; many public libraries and business buildings, and finally the impressive **County Buildings** at Pittsburgh (Pa.), all treated in this style, are admirable rather for the strong individuality of their designer, displayed in their vigorous composition, than on account of the historic style he employed (Fig. 228). Flexible in his hands, it proved intractable in those of many of his imitators, and was so often travestied by inferior designers that it lost its vogue within a few years after Richardson's death. The Chicago **Columbian Exhibition** (1893), in which various architects collaborated, using Renaissance motives, completed its extinction. Since 1893 the Renaissance styles have generally prevailed, though here also a wide eclecticism prevails as to the version or particular phase of these styles

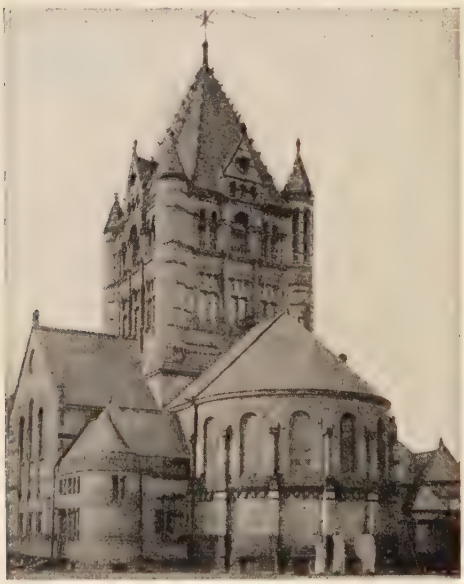

FIG. 227.—TRINITY CHURCH, BOSTON.

to be employed. Meanwhile there are many more or less successful ventures in other historic styles applied to public and private edifices. Underlying this apparent confusion in the use of historic styles, the careful observer may detect certain tendencies crystallizing into definite form. New materials and methods of construction, increased attention to detail, a growing sense of monumental requirements, even the development of the elevator as a substitute for the grand staircase are leaving their mark on the planning, the proportions, and the artistic composition of American buildings, irrespective of

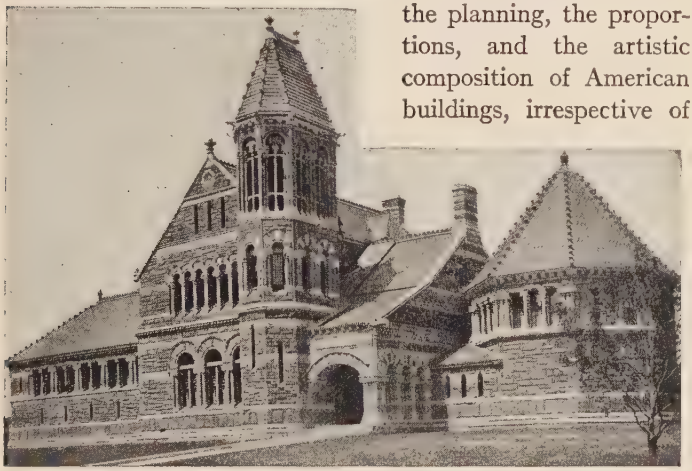

FIG. 228.—LIBRARY AT WOBURN, MASS.

the styles used. The art is with us in a state of transition, and open to criticism in many respects; but it appears to be full of life and promise for the future.

COMMERCIAL BUILDINGS. This class of edifices has in our great cities developed wholly new types, which have taken shape under four imperative influences. These are the demand for fire-proof construction, the demand for well-lighted offices, the introduction of elevators, and the concentration of business

into limited areas, within which land has become inordinately costly. These causes have led to the erection of buildings of excessive height (Fig. 229); the more recent among them constructed with a framework of steel columns and beams, the visible walls being a mere filling-in. To render a building of twenty stories attractive to the eye, especially when built on an irregular site, is a difficult problem, of which a wholly satisfactory solution has yet to be found. There have been, however, some notable achievements in this line, in most of which the principle has been clearly recognized that a lofty building should have a well-marked basement or pedestal and a somewhat ornate crowning portion or capital, the intervening stories serving as a shaft and being treated with comparative simplicity. The difficulties of scale and of handling one hundred and fifty to three hundred windows of uniform style, have been surmounted with conspicuous skill, in an increasing number of remarkable designs, among which may be cited the **West Street Building** (*Cass Gilbert*), American Surety Building (*Bruce Price*, 1847–1902), both at New York; Ames Building, Boston; Carnegie Building, Pittsburgh; Union Trust, St. Louis; and in New York notably in the fine tower-like edifices of the **Metropolitan Life** (*Le Brun*) and **Woolworth** (*Cass Gilbert*) companies. In some cases, especially in Chicago and the Middle West, the metallic

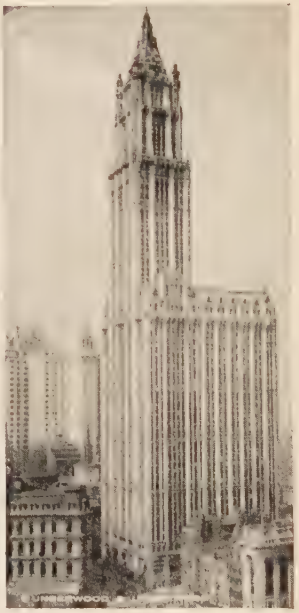

FIG. 229.—WOOLWORTH BUILDING, NEW YORK.

framework is suggested by slender piers between the windows, rising uninterupted from the basement to the top story. In others, especially in New York and the East, the walls are treated as in ordinary masonry buildings. Since 1906 the tendency towards excessive height has in New York reached an extreme in the Singer Building, 625 feet high, the Metropolitan Life Building (700 feet), and the Woolworth Building (765 feet). In the details of American office-buildings every

FIG. 230.—COUNTRY HOUSE AT NYACK, N. Y.

variety of style is to be met with; but the Gothic and the Renaissance, freely modified, now predominate. The tendency toward two or three well-marked types in the external composition of these buildings, as above suggested, indicates, however, the evolution of a style in which the historic origin of the details is a secondary matter. Certain Chicago architects have developed an original treatment of architectural forms by

exaggerating some of the structural lines, by suppressing the mouldings and more familiar historic forms, and by the free use of flat surface ornament. The Schiller, Auditorium, and Fischer Buildings, all at Chicago, Guaranty Building, Buffalo, and Majestic Building, Detroit, all by *L. H. Sullivan*, are examples of this personal style, which illustrates the untrammelled freedom of the art in a land without traditions. A more utilitarian treatment has been adopted by *D. H. Burnham and Sons* in the Railway Exchange and other buildings at Chicago, having walls uniformly pierced with windows between the basement and an enriched upper portion comprising two or three stories.

DOMESTIC ARCHITECTURE. It is in this field that the most characteristic and original phases of American architecture are to be met with, particularly in rural and suburban residences. In these the peculiar requirements of our varying climates and of American domestic life have been studied and in large measure met with great frankness and artistic appreciation. The broad staircase-hall, serving often as a sort of family sitting-room, the "piazza" or veranda, and a picturesque massing of steep roofs, have been the controlling factors in the evolution of two or three general types which appear in infinite variations. The material most used is wood, but this has had less influence in the determination of form than might have been expected. In recent years, various forms of construction in tile, concrete and stucco have begun to displace wood and shingle as a material for rural houses. The artlessness of the planning, which is arranged to afford the maximum of convenience rather than to conform to any traditional type, has been an element of great artistic success. It has resulted in exteriors which are the natural outgrowth of the interior arrangements, frankly expressed, without affectation of style (Fig. 230). In the internal treatment of American houses there has also been a notable artistic advance, harmony

of color and domestic comfort and luxury being sought after rather than monumental effects. A number of large city and country houses designed on a palatial scale have, however, given opportunity for a more elaborate architecture; notably the Vanderbilt, Reid, Carnegie, Schwab, and Phipps residences at New York, the great country-seat of **Biltmore** near Asheville (N. C.), in the Francis I style (by *R. M. Hunt*), and many others. Of late years there has been an increasing tendency to follow Colonial models. The style lends itself to a certain dignity and elegance of treatment which are well suited to large esidences, and which are further enhanced in many cases by grounds whose elaborate landscape gardening shows notable progress in an art that was long almost wholly neglected in this country.

OTHER BUILDINGS. American architects have generally been less successful in ecclesiastical architecture than in civic, collegiate, commercial and domestic work. The preference for small parish churches, treated as audience-rooms rather than as places of worship, has interfered with the development of noble types of church-buildings. Yet there are signs of improvement; and many of the more recent churches, whether in Gothic style or in some form of the neo-classic, are marked by great dignity of effect and sound construction. In semi-public architecture, such as hotels, theatres, clubs, and libraries, there are many notable examples of successful design. The period from 1880 to 1900 was one of rapid advance in monumental effect and beauty of detail, exemplified in such buildings as the Ponce de Leon Hotel at St. Augustine, the Madison Square Garden at New York (already demolished), great public libraries in Boston, New York, Pittsburgh and Washington and several important State capitols. In this development, greatly stimulated by the **Columbian Exhibition** at Chicago in 1893, there was developed a new taste for monumental effects, dignified settings and refined and appropriate detail, bringing

architecture into closer union with the allied arts including landscape gardening. The development of steel-frame construction (see *ante* p. 418) began a momentous transformation of commercial architecture, raising new problems of architectural composition as well as of congestion of circulation in the streets. At the same time there began to appear a new interest in city-planning, which matured into a movement of great importance

FIG. 231.—COUNTRY HOUSE IN COLONIAL STYLE.
(From *The American Architect.*)

after 1900. The entire tendency of design was toward a revival of classic and Renaissance ideals, in which movement the firm of *McKim, Mead and White* were conspicuous leaders.

RECENT AMERICAN ARCHITECTURE. The architectural activity of the United States since the new century opened has by no means been confined to industrial and commercial architecture. Indeed, while the erection of lofty office-buildings has continued in the great commercial centres, some of the most notable architectural enterprises of recent years have been

in the field of educational buildings, in both the East and West. In 1898 a great international competition resulted in the selection of the design of *Mr. E. Bénard* of Paris for a magnificent group of buildings for the **University of California** on a scale of unexampled grandeur, and the erection of this colossal project has been begun with modifications by *J. Galen Howard*. In New York the university groups of Columbia University and New York University, both by *McKim, Mead and White* in neo-classic style (notably the **Low Library** of Columbia University), and the striking neo-Gothic group of the **City College** by *G. B. Post*, have been carried to completion: an equally ambitious project, by *Cope and Stewardson*, has been adopted for the Washington University at St. Louis; and many other universities and colleges have either added extensively to their existing buildings or planned an entire rebuilding on new designs. Among these the national military and naval academies at **West Point** (*Cram, Goodhue and Ferguson*), and **Annapolis** (*Ernest Flagg*), take high rank in the extent of the projected improvements. Museums and libraries have also been erected or begun in various cities, and the New York Public Library, already mentioned, ranks in cost and beauty with those already erected in Boston and Washington.

In other departments mention should be made of several Federal buildings (customs-houses, post-offices, and court-houses) erected under the provisions of the Tarsney act from designs secured by competition among the leading architects of the country; among these the **New York Customs House,** by *Cass Gilbert*, and the great railway terminals at Washington (*D. Burnham*) and New York (the **Grand Central,** by *Warren and Wetmore*, and the **Pennsylvania,** by *McKim, Mead and White*) are the most important; but other buildings, at Washington, Indianapolis, Cleveland, and elsewhere, are also conspicuous, and many of them worthy of high praise. The

tendency to award the designing of important public buildings such as State capitols, county court-houses, city halls, libraries, and hospitals, by competition instead of by personal and political favor, has resulted in a marked improvement in the quality of American public architecture.

CITY PLANNING. Since 1900 there has been throughout the United States a notable movement for the improvement of cities, both by a monumental re-planning of streets and squares, and by the embellishment of existing thoroughfares. The laying out of parks and boulevards has taken on great importance, and many " garden suburbs " have been created.

The most notable of these movements in city-planning has been that at Washington, D. C., carried out by a commission according to the plans of the late C. F. McKim of New York and Daniel Burnham of Chicago, by whom the original city-plan of Major L'Enfant was further developed, securing for the national capital a dignity and beauty of plan and monumental grouping which when fully realized will make it one of the most beautiful capitals in the world. An almost equally important development has taken place in Chicago, especially along the Lake front, from plans by Burnham, and other cities, large and small, notably Philadelphia and Cleveland, are sharing the benefits of this movement. A similar improvement is noticeable in the fine groups of college buildings which are gradually replacing the heterogeneous assemblages of buildings of previous times, as at Princeton, Yale, Chicago and Johns Hopkins Universities and many of the colleges. The tendency as to style seems to be divided between a modernized Gothic and a return to Colonial types.

MONUMENTS. (Additional to those in text.) (Ch. = church; Ho. = house).—I. COLONIAL: In NEW ENGLAND.—Cradock Ho., Medford, Mass., 1634; Witches' Ho., Salem, 1640; Old Stone Ho., Guilford, Conn., 1640; Pepperell Ho., Kittery, Me., 1725; Town House, Newport, R. I., by *Munday*, 1743; Hooper Ho., Danvers,

Mass., 1744; City Hall, Newport, R. I., 1760; by *P. Harrison* Langdon, Wentworth, Ladd and Pierce houses, Portsmouth, N. H.; Ladd Ho., Marblehead; Cowles Ho., Farmington, Conn., 1780; Hollester Ho., Greenfield, Mass., 1797.—The "Old Ship" Church, Hingham, Mass. 1681; Old South Church, Boston, 1729; Farmington Ch., Conn., 1750; Old North Ch.; King's Chapel, Boston.—IN MIDDLE STATES:—Phillipse Manor, Yonkers, N. Y., 1682; Bartram Ho., Philadelphia, 1730; Morris (Jumel) Mansion, N. Y. City, 1758; Cortlandt Manor, N. Y. City, 1760?; Verplanck Ho., Fishkill, N. Y., 1740; Fraunces' Tavern, N. Y. City, 1710; Pennsylvania Hospital, Philadelphia, 1796 Chews Ho., Germantown, Pa., 1772—Old Swedes' Ch., Philadelphia, 1700; St. Peter's Ch., Philadelphia, 1758; St. Paul's Ch., N. Y. City, 1764; St. John's Ch., N. Y. City, 1807; Christ Church, Philadelphia, 1727, restored 1836.

IN SOUTHERN COLONIES.—Shirley Ho., Va., 1700; Stratford Ho., Va., 1730; Tulip Hill, Md., 1750; Bull Pringle Mansion, Charleston, S. C., 1765; Mt. Vernon, Va., by *G. Washington*, 1784; Brandon, Va., 1790; Sabine Hill, Va., 1790; Tayloe Ho. ("Octagon"), Washington, D. C., 1800; Homewood, Baltimore, Md., 1804; Whitehall, Md., 1804; St. Luke's, Smithfield, Va., 1632.-1680.; St. John's Ch., Hampton, Va., 1660; Christ Ch., Williamsburg, Va., 1678; St. James' Ch., Goose Creek, Va., 1711; Bruton Parish Ch., Va., 1715 (restored 1898); St. Paul's, Norfolk, Va., 1730; St. Philip's, Charleston, S. C., 1733; St. Michael's, Charleston, S., 1752.

II. THE CLASSIC REVIVALS.—White House, Washington, D. C., by *J. Hoban*, 1795; Capitol, Washington, D. C., begun 1793 by *Thornton;* cont. 1803 by *Latrobe*, 1817 by *Bulfinch* extended 1858 by *Walter;* Schuykill Water Works, Philadelphia; St. Mark's Ch., in New York City; State Capitol, Columbus, O., 1833; many city halls, State capitols, banks and churches in neo-Greek style.

III. THE GOTHIC REVIVAL.—St. George's Ch., do., by *L. Eidlitz;* Central Ch., Boston, 1868, by *R. M. Upjohn;* Fine Arts Museum, Boston, 1876, by *Sturgis* and *Brigham* (demolished).

(The monuments of the more recent architectural movements are omitted because of their great number.)

CHAPTER XXVIII

ORIENTAL ARCHITECTURE

INDIA, CHINA, AND JAPAN

BOOKS RECOMMENDED: Boerschmann, *Chinesische Architektur.* Brentano, *Picturesque China.* Cole, *Monographs of Ancient Monuments of India.* Conder, *Notes on Japanese Architecture* (in Transactions of R. I. B. A., for 1886). Cram, *Impressions of Japanese Architecture.* Cunningham, *Archæological Survey of India.* Fergusson, *Indian and Eastern Architecture; Picturesque Illustrations of Indian Architecture.* Fuhrman, *China.* Havell, *Indian Architecture; The Ancient and Mediæval Architecture of India.* Le Bon, *Les Monuments de l'Inde.* Morse, *Japanese Houses.* Münsterberg, *Chinesische Kunstgeschichte.* Siren, *The Imperial Palaces of Peking.* Stirling, *Asiatic Researches.* Consult also the *Journal* and the *Transactions* of the Royal Asiatic Society.

INTRODUCTORY NOTE. The architecture of the non-Moslem countries and races of Asia has been reserved for this closing chapter, in order not to interrupt the continuity of the history of European styles, with which it has no affinity and scarcely even a point of contact. Among them all, India alone has produced monuments of great architectural importance. The buildings of China and Japan, although interesting for their style, methods, and detail, and so deserving at least of brief mention, are for the most part of moderate size and of perishable materials. Outside of these three countries there is little to interest the general student of architecture.

INDIA: PERIODS. The architecture of India is astonishingly rich, varied and impressive. The Hindus have been for two thousand years a race of marvelous resource and activity in building. The Moslem architecture of this people has

already been discussed in Chapter XII. It is difficult to classify the non-Mohammedan styles, owing to their frequently overlapping, both geographically and artistically; while the lack of precise dates in Indian literature makes the chronology of many of the monuments more or less doubtful. The divisions given below are a modification of those first established by Ferguson, and are primarily based on the three great religions, with geographical sub-divisions, as follows:

THE BUDDHIST STYLE, from the reign of Asoka, *cir.* 250 B.C., to the seventh century A.D. Its monuments occupy mainly a broad band running northeast and southwest, between the Indian Desert and the Dekkan. Offshoots of the style are found as far north as Gandhara, and as far south at Ceylon.

THE JAINA STYLE, akin to the preceding if not derived from it, covering the same territory as well as southern India; from 1000 A.D. to the present time.

THE BRAHMAN or HINDU STYLES, extending over the whole peninsula. They are sub-divided geographically into the NORTHERN, the CENTRAL or CHALUKYAN in the Dekkan, and the SOUTHERN or DRAVIDIAN in the south; this last style being coterminous with the populations speaking the Tamil and cognate languages. The monuments of these styles are mainly subsequent to the tenth century, though a few date as far back as the seventh.

GENERAL CHARACTER. All these styles possess certain traits in common. While stone and brick are both used, sandstone predominating, the details are in large measure derived

* E. B. Havell in the two works named among "Books Recommended" above, disallows Fergusson's classifications, and contends for the substantial unity of all the Hindu styles. To the writer the distinctions suggested in the modified classification here used appear quite sufficient to justify this division, for the convenience of the student as well as his own.

from wooden prototypes. Structural lines are not followed in the exterior treatment, purely decorative considerations prevailing. Ornament is equally lavished on all parts of the building, and is bewildering in its amount and complexity. Realistic and grotesque sculpture is freely used, forming multiplied horizontal bands of extraordinary richness and minuteness of execution. Spacious and lofty interiors are rarely attempted, but wonderful effects are produced by seemingly endless repetition of columns in halls and corridors, and by external emphasis of important parts of the plan by lofty tower-like piles of masonry.

The sources of the various Indian styles, the origin of the forms used, the history of their development, are all wrapped in obscurity. All the monuments show a fully developed style and great command of technical resources from the outset. When, where, and how these were attained is as yet an unsolved mystery. In all its phases previous to the Moslem conquest Indian architecture appears like an indigenous art borrowing little from foreign styles and having little or no affinity with the arts of Occidental nations.

BUDDHIST STYLE. Although Buddhism originated in the sixth century B. C., the earliest architectural remains of the style date from its wide promulgation in India under Asoka (272–236 B.C.). Buddhist monuments comprise three chief classes of structures: the *stupas* or *topes*, which are mounds more or less domical in shape, enclosing relic-shrines of Buddha, or built to mark some sacred spot; *chaityas*, or temple halls, cut in the rock; and *viharas*, or monasteries. The style of the detail varies considerably in these three classes, but is in general simpler and more massive than in the other styles of India.

TOPES. These are found in groups, of which the most important are at or near Bhilsa in central India, at Manikyala in the northwest, at Amravati in the south, and in Ceylon at Ruanwalli and Tuparamaya. The best known among them

is the **Sanchi Tope,** near Bhilsa, 120 feet in diameter and 56 feet high. It is surrounded by a richly carved stone rail or fence, with gateways of elaborate workmanship, having three sculptured lintels crossing the carved uprights. The tope at Manikyala is larger, and dates from the seventh century. It is exceeded in size by many in Ceylon, that at Abayagiri measuring 360 feet in diameter. Few of the topes retain the *tee,* or model of a shrine, which, like a lantern, once crowned each of them.

Besides the topes there are a few stupas of tower-like form, square in plan, of which the most famous is that at **Buddh Gaya,** where Buddha attained divine light in 588 B.C.

CHAITYA HALLS. The Buddhist speos-temples—so far as known the only extant halls of worship of that religion, except one at Sanchi—are mostly in the Bombay Presidency, at Ellora, Karli, Ajanta, Nassick, and Bhaja. The earliest, that at Karli, dates from 78 B.C., the latest (at Ellora), *cir.* 600 A.D. They consist uniformly of a broad nave ending in an apse and covered by a roof like a barrel vault, and two narrow side aisles. In the apse is the *dagoba* or relic shrine, shaped like a miniature tope. The front of the cave was originally adorned with an open-work screen or frame of wood, while the face of the rock about the opening was carved into the semblance of a sumptuous structural façade. Among the finest of these caverns is that at **Karli,** whose massive columns and impressive scale recall Egyptian models, though the resemblance is superficial and has no historic significance. More suggestive is the affinity of many of the columns which stand before these caves to Persian prototypes (see Fig. 21). It is not improbable that both Persian and classic forms were introduced into India through the Bactrian kingdom 250 B.C. Otherwise we must seek for the origin of nearly all Buddhist forms in a pre-existing wooden architecture, now wholly perished, though its traditions may survive in the wooden screens in the fronts of the

caves. While some of these caverns are extremely simple, as at Bhaja, others, especially at **Nassick** and **Ajanta,** are of great splendor and complexity.

VIHARAS. Except at Gandhara in the Punjab, the structural monasteries of the Buddhists were probably all of wood and have long ago perished. The Gandhara monasteries of Jamalgiri and Takht-i-Bahi present in plan three or four courts surrounded by cells. The centre of one court is in both cases occupied by a platform for an altar or shrine. Among the ruins there have been found a number of capitals whose strong resemblance to the Corinthian type is now generally attributed to Byzantine rather than Bactrian influences. These viharas may therefore be assigned to the sixth or seventh century A.D.

The rock-cut viharas are found in the neighborhood of the chaityas already described. Architecturally they are far more elaborate than the chaityas. Those at Salsette, Ajanta, and Bagh are particularly interesting, with pillared halls or courts, cells, corridors, and shrines. The hall of the **Great Vihara** at **Bagh** is 96 feet square, with 36 columns. Adjoining it is the school-room, and the whole is fronted by a sumptuous rock-cut colonnade 200 feet long. These caves were mostly hewn between the fifth and seventh centuries, at which time sculpture was more prevalent in Buddhist works than previously and some of them are richly adorned with figures.

JAINA STYLE. The religion and the architecture of the Jainas so closely resemble the Buddhist that some recent authorities treat the Jaina style as a mere continuation of the Buddhist. Chronologically they are separated by an interval of some three centuries, *cir.* 650–950 A.D., which have left us almost no monuments of either style. The Jaina is easily distinguished from the Buddhist architecture by the great number and elaborateness of its structural monuments. The multiplication of statues of Tirthankhar in the cells about the temple courts, the exuberance of sculpture, the use of domes

built in horizontal courses, and the imitation in stone of wooden braces or struts are among its distinguishing features.

JAINA TEMPLES. The earliest examples are on **Mount Abu** in the Indian Desert. Built by Vimalah Sah in 1032, the chief of these consists of a court measuring 140 × 90 feet, sur-

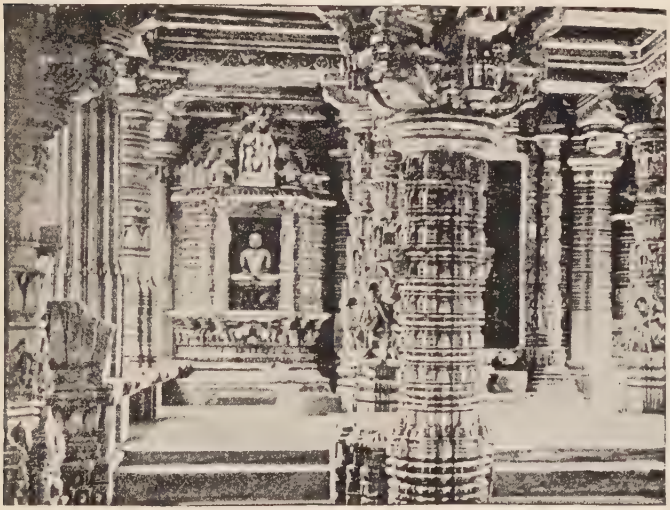

FIG. 232.—PORCH OF TEMPLE ON MOUNT ABU.

rounded by cells and a double colonnade. In the centre rises the shrine of the god, containing his statue, and terminating in a lofty tower or *sikhra*. An imposing columnar porch, cruciform in plan, precedes this cell (Fig. 232). The intersection of the arms is covered by a dome supported on eight columns with stone brackets or struts. The dome and columns are covered with profuse carving and sculptured figures, and the total effect is one of remarkable dignity and splendor. The temple of **Sadri** is much more extensive, twenty minor domes and one of larger size forming cruciform porches on all four

sides of the central *sikhra*. The cells about the court are each covered by a small *sikhra*, and these, with the twenty-one domes (four of which are built in three stories), all grouped about the central tower and adorned with an astonishing variety of detail, constitute a monument of the first importance. It was built by Khumbo Rana, about 1450. At **Girnar** are several twelfth-century temples with enclosed instead of open vestibules. One of these, that of **Neminatha,** retains intact its court enclosure and cells, which in most other cases have perished. The temple at **Somnath** resembles it, but is larger; the dome of its porch, 33 feet in diameter, is the largest Jaina dome in India. Other notable temples are at Gwalior, Khajuraho, and Parasnatha.

FIG. 233.—TOWER OF VICTORY, CHITTORE.

In all the Jaina temples the salient feature is the sikhra or *vimana*. This is a tower of approximately square plan, tapering by a graceful curve towards a peculiar terminal ornament shaped like a flattened melon. Its whole surface is variegated by horizontal bands and vertical breaks, covered with sculpture and carving. Next in importance are the domes, built wholly in horizontal courses and resting on stone lintels carried by bracketed columns. These same traits appear in relatively modern examples, as at Delhi.

TOWERS. A similar predilection for minutely broken sur-

faces marks the towers which sometimes adjoin the temples, as at Chittore (tower of **Sri Allat,** thirteenth century), or were erected as trophies of victory, like that of **Khumbo Rana** in the same town (Fig. 233). The combination of horizontal and vertical lines, the distribution of the openings and the rich ornamentation of these towers are very interesting, though lacking somewhat in structural propriety of design.

HINDU STYLES: NORTHERN BRAHMAN. The origin of this style is as yet an unsolved problem. Its monuments were mainly built between 600 and 1200 A.D., the oldest being in Orissa, at Bhuwanesevar, Kanaruk, and Puri. In northern India the temples are about equally divided between the two forms of Brahmanism—the worship of Vishnu or *Vaishnavism,* and that of Siva or *Shaivism*—and do not differ materially in style. As in the Jaina style, the *vimana* is their most striking feature, and this is in most cases adorned with numerous reduced copies of its own form grouped in successive stages against its sides and angles. This curious system of design appears in nearly all the great temples, both of Vishnu and Siva. The Jaina melon ornament is universal, surmounted generally by an urn-shaped finial.

In plan the vimana shrine is preceded by two or three chambers square or polygonal, some with and some without columns. The foremost of these is covered by a roof formed like a stepped pyramid set cornerwise. The fine porch of the ruined temple at **Bindrabun** is cruciform in plan and forms the chief part of the building, the shrine at the further end being relatively small and its tower unfinished or ruined. In some modern examples the antechamber is replaced by an open porch with a Saracenic dome, as at Benares; in others the old type is completely abandoned, as in the temple at **Kantonnuggur** (1704–22). This is a square hall built of terra-cotta, with four three-arched porches and nine towers, more Saracenic than Brahman in general aspect.

The **Kandarya Mahadeo,** at Khajuraho, is the most noted example of the Northern style, and one of the most splendid structures extant. A strong and lofty basement supports an extraordinary mass of roofs, covering the six open porches and the antechamber and hypostyle hall, which precede the shrine, and rising in successive pyramidal masses until the vimana is reached which covers the shrine. This is 116 feet high, but seems much loftier, by reason of the small scale of its constituent parts and the marvellously minute decoration which covers the whole structure. The vigor of its masses and the grand stairways which lead up to it give a dignity unusual for its size, 60 × 109 feet in plan (*cir.* 1000 A.D.).

At Puri, in Orissa, the **Temple** of **Jugganât,** with its double enclosure and numerous subordinate shrines, the Teli-ka-Mandir at Gwalior, and temples at **Udaipur** near Bhilsa, at **Mukteswara** in Orissa, at Chittore, Benares, and Barolli, are important examples. The few tombs erected subsequent to the Moslem conquest, combining Jaina bracket columns with Saracenic domes, and picturesquely situated palaces at Chittore (1450), Oudeypore (1580), and Gwalior, should also be mentioned.

CENTRAL STYLE. Throughout a central zone crossing the peninsula from sea to sea about the Dekkan, and extending south to Mysore on the west, the Brahmans developed a distinct style during the later centuries of the Chalukyan dynasty. Its monuments are mainly comprised between 1050 and the Mohammedan conquest in 1310. The most notable examples of the style are found along the southwest coast, at Hullabid, Baillur, and Somnathpur.

TEMPLES. Chalukyan architecture is exclusively religious and its temples are easily recognized. The plans comprise the same elements as those of the Jainas, but the Chalukyan shrine is always star-shaped externally in plan, and the vimana takes the form of a stepped pyramid instead of a curved outline.

The Jaina dome is, moreover, wholly wanting. All the details are of extraordinary richness and beauty, and the breaking up of the surfaces by rectangular projections is skilfully managed so as to produce an effect of great apparent size with very moderate dimensions. All the known examples stand on raised platforms, adding materially to their dignity. Some are double temples, as at Hullabid (Fig. 234); others are triple in plan. A noticeable feature of the style is the deeply cut stratification of the lower part of the temples, each band or stratum bearing a distinct frieze of animals, figures or ornament, carved with masterly skill. Pierced stone slabs filling the window openings are also not uncommon.

FIG. 234.—TEMPLE OF HULLABÎD. DETAIL.

The richest exemplars of the style are the temples of **Baillur** and Somnathpur, and at Hullabîd the **Kait Iswara** and the incomplete **Double Temple.** The Kurti Stambha, or gate at Worangul, and the Great Temple at **Hamoncondah** should also be mentioned.

SOUTHERN STYLE. The Brahman monuments of southern India exhibit a style almost as strongly marked as the Chalukyan. This appears less in their details than in their general

plan and conception. The Dravidian temples are not single structures, but aggregations of buildings of varied size and form covering extensive areas enclosed by walls and entered through gates made imposing by lofty pylons called *gopuras*. As if to emphasize these superficial resemblances to Egyptian models, the sanctuary is often low and insignificant. It is preceded by much more imposing porches (*mantapas*) and hypostyle halls or *choultries*, the latter being sometimes of extraordinary extent, though seldom lofty. The choultrie, sometimes called the Hall of 1,000 Columns, is in some cases replaced by pillared corridors of great length and splendor, as at **Ramisseram** and **Madura**. The plans are in most cases wholly irregular, and the architecture, so far from resembling the Egyptian in its scale and massiveness, is marked by the utmost minuteness of ornament and tenuity of detail, suggesting wood and stucco rather than stone. The **Great Hall** at Chillambaram is but 10 to 12 feet high, and the corridoors at Ramisseram, 700 feet long, are but 30 feet high. The effect of *ensemble* of the Dravidian temples is disappointing. They lack the emphasis of dominant masses and the dignity of symmetrical and logical arrangement. The very loftiness of the gopuras makes the buildings of the group within seem low by contrast. In nearly every temple, however, some one feature attracts merited admiration by its splendor, extent or beauty. Such are the **Choultrie** built by Tirumalla Nayak at Madura (1623–45), measuring 333 × 105 feet; the corridors already mentioned at Ramisseram and in the **Great Temple** at Madura; the gopuras at **Tarputry** and Vellore, and the **Mantapa** of **Parvati** at Chillambaram (1595–1685). Very noticeable are the compound columns of this style, consisting of square piers with slender shafts coupled to them and supporting brackets, as at Chillambaram, Peroor, and Vellore; the richly banded square piers, the grotesques of rampant horses and monsters, and the endless labor be-

stowed upon minute carving and ornament in superposed bands.

OTHER MONUMENTS. Other important temples are at Tiruvalur, Seringham, Tinevelly, and Conjeveram, all alike in general scheme of design, with enclosures varying from 300 to 1,000 feet in length and width. At **Tanjore** is a magnificent temple with two courts, in the larger of which stands a *pagoda* or shrine with

FIG. 235.—SHRINE OF SOUBRAMANYA, TANJORE.

a pyramidal vimana, unusual in Dravidian temples, and beside it the smaller **Shrine** or **Soubramanya** (Fig. 235), a structure of unusual beauty of detail. In both, the vertical lower story with its pilasters and windows is curiously suggestive of Renaissance design. The pagoda dates from the fourteenth, the smaller temple from the fifteenth century.

ROCK-CUT RATHS. All the above temples were built subsequently to the twelfth century. The rock-cut shrines date in some cases as far back as the seventh century; they are called *kylas* and *raths*, and are not caves, but isolated edifices, imitating structural designs, but hewn bodily from the rock. Those at Mahavellipore are of diminutive size; but at **Purudkul** there is an extensive temple with shrine, choultrie, and gopura surrounded by a court enclosure measuring 250 × 150 feet (ninth century). More famous still is the elaborate **Kylas** at **Ellora,** of about the same size as the above, but more complex, and complete in its details.

PALACES. At Madura, Tanjore, and Vijayanagar are Dravidian palaces built after the Mohammedan conquest and in a mixed style. The domical octagonal throne-room and the **Great Hall** at Madura (seventeenth century), the most famous edifices of the kind, were evidently inspired from Gothic models, but how this came about is not known. The Great Hall with its pointed arched barrel vault of 67 feet span, its cusped arches, round piers, vaulting shafts, and triforium, appears strangely foreign to its surroundings.

CAMBODIA. The subject of Indian architecture cannot be dismissed without at least brief mention of the immense temple of **Nakhon Wat** in Cambodia. This stupendous creation covers an area of a full square mile, with its concentric courts, its encircling moat or lake, its causeways, porches, and shrines, dominated by a central structure 200 feet square with nine pagoda-like towers. The corridors around the inner court have square piers of almost classic Roman type. The rich carving, the perfect masonry, and the admirable composition of the whole leading up to the central mass, indicate architectural ability of a high order. Very remarkable also are the ruins in Java at Borabador.

CHINESE ARCHITECTURE. The most marked feature of Chinese architecture is its monumental planning, with an al-

most Roman sense of the importance of axial symmetry, as represented in the typical temple plan, or the plan of the Forbidden City (the Imperial Palace) in Peking. Indeed Peking itself is laid out on one great axis seven miles long. Even in the largest palaces and temples, however, the superstructure is generally of wood, although set frequently on terraces of masonry ringed with rich marble balustrades. This wooden construction has largely prevented the preservation of any very ancient monuments; the greater part of those extant date only from the Manchu dynasty (1644–1912), with a few from the Ming dynasty (1368–1644). The similarity between the oldest work and that more recent, together with literary evidence and that of tomb reliefs and votive pagodas, proves the present style to be an ancient one, dating back at least to the beginnings of the Sung dynasty (960–1280).

Aside from the formality of its planning and the ingenious bracketing of the carpentry, the most striking peculiarities of Chinese architecture are the use of the most brilliant, pure, spectral colors in the decoration, and the broad spreading tile roofs. Temples, palaces, even shops and private house doorways glow with vermillion, emerald green, vivid blue, white, and gold, particularly in Peking and the north. At times, glazed faïence tiling is used with gorgeous effect, as in the "Spirit Walls" of the Winter and Summer Palaces, or the "Pai Lou" (gateway) of the monastery of Wo Fu Tsu near Peking. The temple of Confucius in Chufoo is peculiar in its use of white marble columns with exquisitely carved dragons instead of the usual wooden columns lacquered red. Stone columns are also found frequently in Cantonese work.

The roofs of all Chinese monumental buildings invariably slope downward in a curve, subtle and gentle in the north; exaggerated and fantastic in the south, where stepped gable walls of masonry usually receive the roof. The tiles on domestic buildings are usually black or grey, but those of palaces

and temples are true porcelain tiles usually brilliant yellow, occasionally green, or, as in the great Temple of Heaven at Peking, intense azure blue. Much is made of the hips, ridges, and crestings; finials of dragons, dogs and miscellaneous beasts are common; in the Yangtse valley and the south elaborate crestings of metal and crowded scenes of many figures modelled in cement decorate the roofs.

The pagodas, which are such a frequent decoration of Chinese landscape, are usually of several receding stories, each with its own curved roof and bracketed cornices. The most famous of them, the Porcelain Tower, of Nanking, destroyed in the Taiping Rebellion in 1850, was completely encased in faïence polychrome tiles; it was built in 1412. Other famous pagodas exist near Peking, in Soochow, and in and near Hangchow. They are always associated with Buddhist temples, being distant descendents of the Indian Stupa; other stupas in China show how definite were the influences that Buddhism brought to China.

JAPANESE ARCHITECTURE. Apparently associated in race with the Chinese and Koreans, the Japanese are far more artistic in temperament than either of their neighbors. The refinement and originality of their decorative art have given it a wide reputation. Unfortunately the prevalence of earthquakes has combined with the influence of the traditional habits of the people to prevent the maturing of a truly monumental architecture. Except for the terraces, gates, and enclosures of their palaces and temples, wood is the predominant building material. It is used substantially as in China, the framing, dovetailing, bracketing, broad eaves and tiled roofs of Japan closely resembling those of China. The chief difference is in the greater refinement and delicacy of the Japanese details and the less monumental disposition of the temple terraces, the beauty of which is greatly enhanced by skilful landscape gardening. The gateways recall somewhat those of

the Sanchi Tope in India (p. 429), but are commonly of wood. Owing to the danger from earthquakes, lofty towers are rarely seen; but attached to many of the temples are *pagodas*, square towers of four or five stories, marvelously framed of timber and extremely picturesque, as at **Horiuji,** Kyoto, Nagoya, etc. The temple groups, in addition, comprise terraces, gates, shrines and halls of various sizes, generally open on one or more sides. All these buildings are framed of wood, beautifully wrought, carved, lacquered and adorned with fittings of gilded metal. The group at **Nikko** is the most ornate though not the purest in style.

The domestic architecture of Japan, though interesting for its arrangements, and for its sensible and artistic use of the most flimsy materials, is too trivial in scale, detail and construction to receive more than passing reference. Even the great palace at Tokio, covering an immense area, is almost entirely composed of one-storied buildings of wood, with little of splendor or architectural dignity.

MONUMENTS. (Additional to those in text.) BUDDHIST: Topes at Sonari, Satdara, Andher, in Central India; at Sarnath, Jelalabad and Salsette; in Ceylon at Anuradhapura, Tuparamaya, Lankaramaya.—Grotto temples (chaityas), mainly in Bombay and Bengal Presidencies; at Behar, especially the Lomash Rishi, and Cuttack; at Bhaja, Bedsa, Ajanta, and Ellora (Wiswakarma Cave); in Salsette, the Kenheri Cave.—Viharas: Structural at Nalanda and Sarnath, demolished; rock-cut in Bengal, at Cuttack, Udayagiri (the Ganesa); in the west, many at Ajanta, also at Bagh, Bedsa, Bhaja, Nassick (the Nahapana, Yadnya Sri, etc.), Salsette, Ellora (the Dekrivaria, etc.). In Nepâl, stupas of Swayanbunath and Bouddhama.

JAINA: Temples at Aiwulli, Kanruuc (Black Pagoda), and Purudkul; groups of temples at Palitana, Girnar, Mount Abu, Somnath, Parisnath; the Sas Bahu at Gwalior, 1093; Parswanatha and Ganthai (650) at Khajuraho; temple at Gyraspore, 7th century; modern temples at Ahmedabad (Huttising), Delhi, and Sonaghur; in the south at Moodbidri, Sravana Belgula.

NORTHERN BRAHMAN: Temples, Parasumareswara (500 A.D.),

Mukteswara, and Great Temple (600–650), all at Bhuwaneswar, among many others; of Papanatha at Purudkul; grotto temples at Dhumnar, Ellora, and Poonah; temples at Chandravati, Udaipur, and Amritsur (the last modern); tombs at Oudeypore, Ulwar, and Goverdhup; ghâts or landings at Benares and elsewhere.

CENTRAL: Temples at Buchropully and Hamoncondah, 1163; ruins at Kalyani; grottoes of Hazar Khutri.

SOUTHERN: Rock-cut temples (raths) at Mahavellipore; Tiger Cave at Saluvan Kuppan; temples at Purudkul, Tiruvalur, Combaconum, Vellore, Peroor, Vijayanagar; pavilions at Tanjore and Vijayanagar; many temples in the Kashmir Valley difficult of assignment to particular styles.

CHAPTER XXIX

CONTEMPORARY ARCHITECTURE

(*By Talbot Faulkner Hamlin*)

BOOKS RECOMMENDED: Ahlberg, Hakon, *Swedish Architecture of the Twentieth Century*, London, 1925. Bragdon, Claude Fayette, *Architecture and Democracy*, New York, 1926. Brown, Frank Chouteau, *Modern English Churches*, Cleveland, 1923. Cram, Ralph Adams; Hastings, Thomas; and Bragdon, Claude Fayette; *Scammon Lectures on Architecture for* 1915, Chicago, 1917. *Exposition des Arts Decoratifs*, Paris, 1925; *Bâtiments et Jardins*, etc., Paris, 1925. Goodhue, Bertram Grosvenor, *Architect and Master of Many Arts*, A. I. A. Memorial Volume, 1925. Le Corbusier-Saugnier (pseud. for C. E. Jeanneret), *Towards a New Architecture*, trans. by Frederick Etchells, New York, 1927. *Monograph on the work of McKim, Mead and White*, 1879-1915, New York, 1915. *Monograph on the work of Mellor, Meigs and Howe*, New York, 1923. Mendelsohn, Erich, . . . *Bilderbuch eines Architekten*, Berlin, 1926. Nicholson, Sir Charles and Spooner, C., *Recent English Ecclesiastical Architecture*, London, 1912. Park, Edwin Avery, *New Backgrounds for a New Age*, New York, 1927. Sexton, Randolph, *American Apartment Houses of Today*, New York, 1926. Consult also the current architectural press, especially: Journals of the American Institute of Architects (New York), and the Royal Institute of British Architects (London); Architectural Record, American Architect and Architecture (American); Architectural Review (English); L'Architecture (French); Bauwelt and Moderne Bauformen (German).

INDUSTRIALISM. The change wrought by the growing industrialism of the twentieth century has meant the universal adoption of the building technique of industrialism — steel skeleton construction, and the wide use of reinforced concrete.

It has also led to the growth of new types — office building, loft building, factory; and has necessitated the revision of housing standards and the development of industrial housing. To the extent to which building technique for steel and reinforced concrete is the same wherever used and the new problems presented by industrialism similar, contemporary architecture tends to become international.

Growing urbanization of the population of every country has meant a revaluation of the aims of city architecture, given mere area a value it never had, forced the most rigid elimination of spaces used only as passages; and, in general, made architectural grandeur or openness of effect subsidiary to rentable or usable area. In America, especially, where real estate speculation has frequently progressed unchecked, congestion has forced land values to a level which compels owners to build structures of great height and thus add still more to the congestion.

THE GROWTH OF MODERNISM. New forms in art followed naturally the feeling, predominate after the war, that the old had passed away, that a new world was ahead. Moreover, the increasingly scientific attitude of mind has led designers to seek for a functional expression of the new materials. Steel and concrete both suggest the use of strong vertical and horizontal (but particularly vertical) lines, wide spans, and slim supports. Reinforced concrete also lends itself to curving forms, like the great French Dirigible Hangars at Orly, by Freyssinet et Limousin. To many designers it seems illogical to dress these materials in the forms of the past, which are usually the forms of stone or wood origin, and frequently unfitted to the mass-production of many building materials today.

IN AMERICA. American progress has been one of technique, of planning, and of style. In technique this has consisted in the gradual mastery of the new building materials

industrialism offers, together with pressing necessity for economy of construction. No longer can carved or modelled ornament be used lavishly. Economy has produced thinner walls, larger windows, smaller piers; designs following the structure simply. This unity of design and structure has affected even monumental buildings; the Nebraska State Capitol, and the Los Angeles Public Library, both by the late Bertram Grosvenor Goodhue, show clearly the effects of reinforced concrete design.

FIG. 236.—NEBRASKA STATE CAPITOL, FRONT ENTRANCE.

In planning, the new industrialism has produced many changes. The office building has been developed to a degree of efficiency before unknown; the problem of combining the maximum of communication by elevators, hallways, and lobbies with the maximum of income-producing space has been studied carefully. A new element of difficulty has been injected into this problem by the zoning or height of building laws of various cities, that have forced high buildings back from the street or the rear yard as they rise, thus changing their entire architecture and bringing into the city skylines variety and mass composition. The Tribune Tower, Chicago, and the

American Radiator Building, New York, both by John Mead Howells and Raymond Hood, the South West Bell Telephone Building, St. Louis, by Mauran, Russell, and Crowell, and the beautiful New York Telephone Building, New York, by McKenzie, Voorhees, and Gmelin (later Voorhees, Gmelin and Walker) are good examples of the beauty and grandeur thus obtainable.

FIG. 237.—NEW YORK TELEPHONE BUILDING.

Factories and industrial buildings have been revolutionized by the freedom given by steel and concrete construction and the universal use of steel windows. Although many are purely works of engineering, occasional examples are strikingly architectural and embody a new quality of beauty. The Dearborn Laboratories of the Ford Company, Dearborn, Michigan, by Albert Kahn, and the enormous warehouses in South Brooklyn for the U. S. Quartermaster's Stores, by Cass Gilbert, show the possibilities for beauty inherent in similar problems.

In housing, the greatest changes have occurred in apartment house design due to rigid elimination of waste space. In the West this has produced the "Pullman" type apartment, with folding or disappearing furniture and closet kitchenettes, while

in the East, generally, the result has been careful plan study to do away with large halls and corridors, and to reduce the average size of rooms, a change compensated for by the additional light and air which the newer types include. Everywhere there has been an intensive study of the relation of land and building values, and the discovery that frequently tenements covering much less of the lot than that allowed by law were not only feasible but frequently more profitable. Of the newer tenements, those of Andrew J. Thomas may be studied especially.

The war necessitated the wholesale construction of housing developments in smaller industrial communities. Many villages of beauty and charm resulted. Yorkship, near Camden, New Jersey, by Electus D. Litchfield, and the work of Clipston Sturgis around Bridgeport, Connecticut, are particularly good. In both there is careful grouping of a few typical units, and pleasant color in the materials. But the development of model suburban or industrial communities as a unified architectural effort has never become popular in America; only Kingsport, Tennessee, and Mariemont, Ohio, rival some of the British schemes. Both are eminently successful, economically and artistically; Kingsport especially important in its carefully planned combination of industrial, business, and residence facilities.

In cities the high rentals have inspired a new type — the apartment hotel, of non-housekeeping apartments with hotel service. These are often of great height, rivalling that of the typical skyscraper office buildings whose design they often of necessity resemble. An example of this is the thirty story Ritz Tower in New York by Emory Roth.

STYLE. The new emphasis on mass composition mentioned above has permeated all good recent American architecture and compelled a readjustment of style ideas. No revivalism of archeological styles in the old sense is any more possible; nor

is the old unthinking eclecticism, according to which a style was like a suit of clothes, to be donned or doffed at a whim. On the other hand "secessionism" has never obtained a firm hold in America. The result has been a continuously growing freedom in style treatment; styles become ladders for the imagination rather than rules of composition. The San Francisco Exposition with its imaginative, gay-colored classic by Bliss and Faville, McKim, Mead and White, and Carrère and Hastings, and its exuberant, fantastic Court of the Ages by Louis C. Mullgardt combined into one harmonious and freshly conceived whole, is as far from the cold whiteness of the Chicago Fair of 1893 as it is from the bizarre modernism of various European expositions.

The Gothic is treated with similar freshness and freedom, as in the Church of St. Vincent Ferrer, New York, by Goodhue; the Byzantine, as in the National Shrine of the Sacred Heart, Washington, by Murphy and Olmstead; Romanesque styles seem particularly easy to treat with the greatest freedom, and expressive of a transitional eager age, particularly fitted for our own, and they have thus achieved a new popularity, as in the beautiful Shelton Hotel, New York, by Arthur C. Harmon.

Notice should also be made of the free adaptations of Spanish baroque forms in much charming domestic work in the Southwest. Occasional attempts have been made to domesticate the Indian Pueblo style, as in the interesting Art Museum of Santa Fé, New Mexico, by Rapp Brothers and Hendrickson. In most cases, however, this style is too crude and alien for successful adaptation.

But there is a small and growing number of architects who go further in freedom, and find in new materials and programs demand for a style absolutely new. It is a style growth natural, inevitable, unforced. It is not based on an effort to be different, like "secessionism," but on the effort to create a convincing beauty in new surroundings. It realizes, studies, accepts, and

assimilates the past, and from this fertile soil new forms flower. The most typical monument of this and one of the finest recent buildings in America is the Nebraska State Capitol at Lincoln, mentioned earlier, with sculpture by Lee Lawrie and decorations by Hildreth Meière. Among commercial buildings, the New York Telephone Building is supreme. The general tendencies of this new style may be summed up as follows: Truth to structure. Interest in dominant mass composition. Direct use of materials. Simple, large surfaces. Ornament based largely on natural forms, conventionalized to suit material and position, never archeological though often showing influences from the classic, romanesque and occasionally secessionist sources. A new importance which simple surfaces give to sculpture and painted ornament, and hence a new synthesis of the arts and a new daring in the use of color as an integral part of architectural design.

FIG. 238—SHELTON HOTEL, NEW YORK.

GREAT BRITAIN. Recent building in Great Britain is especially distinguished in ecclesiastical work and in low cost

multiple housing. The old sway of the Gothic over church design has largely passed. Even in Liverpool Cathedral, by Sir G. Gilbert Scott, the Gothic is highly modernized and fresh, though a little heavy. The smaller churches are even less archeological; in the effort to produce inexpensively effects of height, space, and a devotional atmosphere, styles are forgotten — much use is made of high brick walls, simple piers, high round arches, and timber roofs. Brick is often left exposed in the interior, and ornament severely concentrated.

FIG. 239.—THE CENOTAPH, LONDON.

English excellence in domestic work has produced no monuments more important than the war time and post-war time industrial housing developments. A need for the starkest economy demanded careful study of plan, and prevented those tricks of false picturesqueness that sometimes obscured earlier English work. Nevertheless the genius of the English in the appropriate use of building materials is particularly visible in the effects of charm often obtained in this work by the studied variation of brick, stucco, tile, and wood.

Much new commercial building has changed London materially. In this there is the widest variety. The reconstruction of Regent Street replaced the old charming stucco classic of a

hundred years ago, with large and often competing fronts in a pseudo-classic style over heavy and over elaborated with meaningless ornament. On the other hand, some of the new work is simple, direct, and freely modern, such as Adelaide House, by Sir John Burnet. England is also distinguished in the field of monumental architecture, by the creation of what seems to many the most beautiful of the world's war memorials, the Cenotaph, in Whitehall, by Sir Edwin Lutyens, whose simplicity, austere dignity, and perfection of proportion make it emotionally moving as only great architecture can be.

FRANCE. In France, a restless spirit of experiment has thrown more and more emphasis upon modernist activities and forms. Even the tradition of the École des Beaux Arts, formerly conservative, has completely changed; its problems today show almost without exception attempts to create new forms. In actual work, it is reinforced concrete which has had the greatest effect on design. The church of Notre Dame de Raincy by Perret Frères is typical; its height, slender supports, segmental vault and enormous windows filled with a grating of pierced concrete tiles, glazed, are all the direct result of its material.

It is in the Exposition des Arts Decoratifs at Paris, in 1925, that French tendencies are best exhibited. Large wall surfaces, large rectangular openings grilled with iron in free patterns, much use of mouldings of repeated reedings or other unconventional profiles, an avoidance of curves in structural members, romanticism of simple, general outline, rich color, all combined to set this as much apart from the so-called *art nouveau* of the Exposition of 1900 as from the fashionable classicism of earlier times.

In the greater part of this French work the traditional French "logique" is unmistakably the dominant motive. The ideas of mass production and the forms suitable to it, and of the theoretical, inevitable beauty of efficient machinery have led

to the use of harsh, uncompromising cubical forms even in the design of country houses. (See, for example, the works of Le Corbusier and Jeanneret.) It is largely design of the mind and not of the heart.

The tradition of the close association of sculpture, painting, and architecture, has not, however, died. As in some of the recent work in America, the elimination of historical ornament

FIG. 240.—A VISTA OF THE PARIS EXPOSITION.

has increased the demand for this collaboration. The result is especially marked in the best of French memorials, in which sculpture and architecture reach a new unity, fresh and unconventional; as in the impressive Dixmude Memorial by Roux Spitz, or that of Lyons, by Charles Abella, architect and Marcel Gaumont, sculptor; and the importance of decorative painting may be seen in the interiors of some of the new "modernist" churches like St. Louis de Vincennes, by Droz and Marrast.

Equally important has been the tremendous and vivid devel-

opment of the minor arts; especially the iron work of Oscar Brandt, the glassware of Lalique, and the furniture and decorative work of such "ensembliers" (a word significant of the new urge toward unity) as Sue et Mare, Ruhlmann, the Atelier Primavera, etc.

GERMANY AND AUSTRIA. The world wide trend toward modernism is marked in all the best work of Germany

FIG. 241.—MAIN ADMINISTRATION BUILDING, DUSSELDORF EXPOSITION, 1926. *Wilhelm Kreis, Architect*

and Austria. This is particularly noticeable in a new, fresh, and successful attempt to give to factories and industrial buildings a beauty that is authentic and results naturally from the necessary practical requirements, which has given Germany the most beautiful factories in the world; and in the enormous development of housing schemes, both urban and rural. In these the general plan is seen rightly as the most important element, and is carefully studied for both practical and aesthetic ends. The individual houses are usually starkly simple, and the influence of the cubism of Le Corbusier is everywhere

evident. In urban housing, the state housing developments in Vienna (especially Fuchsenfeldhof, by Smid and Aichmeyer) are unusually successful in combining livable charm, economy and efficiency of planning.

Various office buildings (Chilehaus, Hamburg, by Fritz Höger) show an attempt to combine American structural ideas with this new modernist freedom of decorative form; and the

FIG. 242.—EINSTEIN TOWER AT POTSDAM.

work of Eric Mendelsohn, in office buildings, factories, and especially the "Einstein Tower," an observatory, is significant in its daring attempt to use in the simplest and most novel ways all the opportunities of the new building techniques.

SCANDINAVIA. A rather different development of modernism is noticeable in the recent architecture of Scandinavia. There is in general no such close reasoned logic, no such *à priori* design. On the contrary, new ideas have grown quite naturally into the living architectural tradition, combining with the generally renaissance heritage to produce a new beauty, free, un-

forced, natural. As almost everywhere there are large simple surfaces, little archæological ornament, and new importance given to architectural sculpture, and painted and mosaic interior decoration. The Town Hall of Stockholm, by Ragnar Östberg is the greatest monument of this style, but many new churches and the Helsingsfors Railway Station, by Eliel Saarinen also deserve mention; the last in grandeur, logic of design, and decorative richness, the finest railway station in Europe.

OTHER COUNTRIES. The movement toward modernism and away from classicism to eclecticism has affected architecture everywhere. In *Holland* a new impetus has been given to the imaginative use of brick work; apartment houses and small house groups, particularly in Amsterdam, by I. Brandes, and Kramer and de Klerk show original and occasionally erratic use of this material; a new Post Office in Utrecht, by J. Crouwel, Jr., has, in addition, a beautiful central hall with great ovoid arches as the main elements of the structure. In *Italy*, taste still seems uncertain, varying between the tradition of Roman grandeur, as in the Italian building at the Paris Exposition des Arts Decoratifs, the Baroque tradition, as in much of the new work in the cities, and occasional extreme modernism. In both China and Japan, western influence has set the younger architects to all sorts of compromises, usually disastrous, between the native tradition and the foreign forms. Exception should be made of much rebuilding of Buddhist temples in China, faithfully carried out in the old way; and of the competition for a tomb for Sun Yat Sen, in Canton, whose winning design, by Y. C. Lu, was an excellent example of Chinese architecture. In Tokio, the great Imperial Hotel, by the American, Frank Lloyd Wright, is an excellent example of the romantic beauty attainable by purely modernist methods.

CONCLUSION. The universality of this trend toward modernism is on such a sound logical and aesthetic basis, that

its further development in all countries is inevitable. No longer an art of mere protest, like the *art nouveau* of 1900, it will probably become broader, sounder, more tolerant; no longer merely hostile to local traditions and past beauty, it is, rather, assimilating them; so that design is gradually becoming again, as it was before the days of the classic revivals, not primarily a matter of using an adapted historical style that was allowed completely to dictate the forms, but rather a process of creation, in which forms influenced by the past may be used or not, but in which the whole unity is the result not of archæology, but of creation.

GLOSSARY

OF TERMS NOT DEFINED IN THE TEXT

ALCAZAR (Span., from Arabic *Al Kasr*), a palace or castle, especially of a governing official.

ARCHIVOLT, a band or group of mouldings decorating the wall-face of an arch; or a transverse arch projecting slightly from the surface of a barrel or groined vault

ASTYLAR, without columns.

BALNEA, a Roman bathing establishment, less extensive than the *thermæ*.

BEL ÉTAGE, the principal story of a building, containing the reception rooms and saloons; usually the second story (first above the ground story).

BROKEN ENTABLATURE, an entablature which projects forward over each column or pilaster, returning back to the wall and running along with diminished projection between the columns, as in the Arch of Constantine (Fig. 63).

CANTONED PIERS, piers adorned with columns or pilasters at the corners or on the outer faces

CARTOUCHE (Fr.), an ornament shaped like a shield or oval. In Egyptian hieroglyphics, the oval encircling the name of a king.

CAVETTO, a moulding of concave, quarter round section.

CHEVRON, a V-shaped ornament.

CHRYSELEPHANTINE, of ivory and gold; used of statues in which the nude portions are of ivory and the draperies of gold.

CONSOLE, a large scroll-shaped bracket or ornament having its broadest curve at the bottom.

CORINTHIANESQUE, resembling the Corinthian; used of capitals having corner volutes and acanthus leaves, but combined otherwise than in the classic Corinthian type.

EMPAISTIC, made of, or overlaid with, sheet metal beaten or hammered into decorative patterns.

ENTABLATURE, the crowning feature of a classic colonnade or building, consisting of architrave, frieze and cornice.

EXEDRÆ, curved seats of stone; niches or recesses, sometimes of considerable size, provided with seats for the public.

FENESTRATION, the whole system or arrangement of windows and openings in an architectural composition.

FOUR-PART. A four-part vault is a groined vault formed by the intersection of two barrel vaults. Its diagonal edges or *groins* divide it into four sections, triangular in plan, each called a *compartment*.

GIGANTOMACHIA, a group or composition representing the mythical combat between the gods and the giants.

HALF-TIMBERED, constructed with a timber framework showing externally, and filled in with masonry or brickwork or lath-and-plaster.

IMAUM, imâm, a Mohammedan priest.

IMBRICATED, decorated with, or formed like, scales.

KAABAH, the sacred shrine at Mecca, a nearly cubical structure hung with black cloth.

KARAFAH, a region in Cairo containing the so-called tombs of the Khalifs.

LACONICUM, the sweat-room in a Roman bath; usually of domical design in the larger *thermæ*.

LADY CHAPEL, in many cathedrals the central or axial chapel of the *chevet*, usually longer and richer than the rest, and dedicated to the Virgin Mary; any chapel to the Virgin may receive the name.

MEZZANINE, a low, intermediate story.

MUEDDIN (or *muezzin*), a Mohammedan mosque-official who calls to prayer.

NARTHEX, a porch or vestibule running across the front of a basilica or church.

NEO-GOTHIC, NEO-MEDIÆVAL, in a style which seeks to revive and adapt or apply to modern uses the forms of the Middle Ages.

OCULUS, a circular opening, especially in the crown of a dome.

OGEE ARCH, one composed of two juxtaposed wavy curves, meeting in a point at the top.

PALÆSTRA, an establishment among the ancient Greeks for physical training.

PAVILION (Fr. *pavillon*), ordinarily a light open structure of ornate design. As applied to architectural composition, a projecting section of a façade, usually rectangular in plan, and having its own distinct mass of roof.

PRESBYTERY, the eastern part of the choir, beyond the choir stalls or choir proper, reserved

for the officiating clergy, and raised a step or two higher than the choir itself.

QUARRY ORNAMENT, any ornament covering a surface with two series of reticulated lines enclosing approximately quadrangular spaces or meshes.

QUATREFOIL, with four leaves or *foils;* composed of four arcs of circles meeting in cusps pointing inward.

QUOINS, slightly projecting blocks of stone, alternately long and short, decorating or strengthening a corner or angle of a façade.

RETRO-CHOIR, any space east of the apse or presbytery of a church, especially a chapel or enlarged ambulatory.

REVETMENT, a veneering or sheathing.

RUSTICATION, treatment of the masonry with blocks having roughly broken faces, or with deeply grooved or bevelled joints.

SOFFIT, the under side of an architrave, beam, arch, or corona.

SPANDRIL, the triangular wall-space between two contiguous arches.

SQUINCH, a bit of conical vaulting filling in the angles of a square so as to provide an octagonal or circular base for a dome or lantern.

STOA, an open colonnade for public resort.

TEPIDARIUM, the hot-water hall or chamber of a Roman bath.

TYMPANUM, the flat space comprised between the horizontal and raking cornices of a pediment, or between a lintel and the arch over it.

VOUSSOIR, any one of the radial stones composing an arch.

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